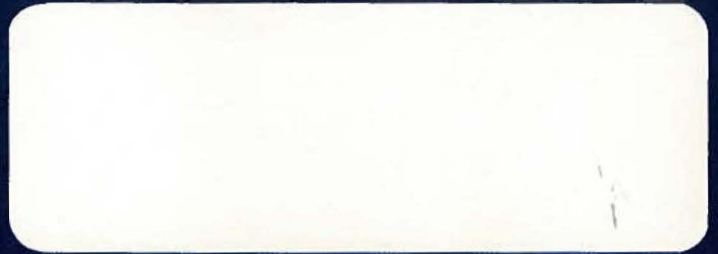


Exhibit 72

UNIVERSITY OF MINNESOTA SPACE SCIENCE CENTER



INVESTIGATION OF POSSIBLE ASBESTOS CONTAMINATIONS IN TALC SAMPLES

SCANNING ELECTRON MICROSCOPE EXAMINATION

Specimens of powdered talc were received from Johnson & Johnson Co. and from McCrone Associates. Analysis of these samples using the scanning electron microscope was requested in order to determine the possible content of fibrous crysotile asbestos contained in the talc samples. The first lot of material examined was labeled by McCrone Associates Lewin.

The samples were mounted on one half inch aluminum electron microscope stubs with silverprint glue. The glue was first placed on the aluminum stub and the sample was then pressed to the surface of the wet silver print. A jet of pure Freon was used to remove excess talc from the surface. The specimens were then shadowed with a thin layer of carbon and gold providing a conductive path to the specimen stub. The stubs thus prepared were placed in the scanning electron microscope which was operated at 20 kilovolts electron beam energy and were examined at magnifications between 20 and 25,000 times. The initial effort was directed toward detection of the presence of fibrous morphologies in the basically sheet structured talc bodies. To this end crysotile asbestos specimens were prepared as outlined above and observed in the S.E.M. as illustrated in Figure 1.

To be noted, of course, is the highly fibrous structure as opposed to the layered structure of the talc bodies. The asbestos fiber can be seen to shred both at the ends and on occasion at the center of a fiber bundle giving an appearance not unlike rope but on a much magnified scale.

Having established the general appearance of asbestos, suitable samples were selected for examination in a scanning electron microscope. A magnification of 1,000 times seems quite adequate to pick up any appreciable fibrous morphology present within the talc sample. In order to make the survey as quantitative as possible, a grid of pictures was mapped on the surface consisting of five pictures on each side of

a square covering thus 25 squares at 1,000 times magnification. Numerous fibrous structures were observed during this examination of both the original Lewin material and the Shower to Shower material supplied by Johnson & Johnson. Examples of these micrographs are shown in the following figures. Figure 2 shows one such fibrous material which is in fact split on the end and is generally within the limits of possible diameter of an asbestos fiber. The general character of the split at the end, however, rather than being shredded, gives a somewhat more solid appearance indicative of an organic fiber such as wood. Figure 3 shows an area at the center which may possibly indicate an asbestos structure. Slight differences in character, however, exist. Although the rough appearance of this body is shredded, careful examination indicates that it is more than likely an edge on view of a talc structure.

Figure 4 shows another such structure. In addition, however, at the center of the micrograph indicated by the arrow, is a small broken fiber which is too small to identify for certain as either talc or asbestos. Other such examples are seen in Figures 5 and 6. These may probably be discounted on the basis of their very short length. One such fiber which is sufficiently long to be suspect is seen in Figure 7, taken at 500 times magnification. These are, however, seldom encountered. Figure 8 and 9 show higher magnification pictures of such fibers taken at 5,000 and 10,000 times respectively. These cannot be entirely discounted although the net volume involved, even if they are asbestos fibers, is extremely small.

Figure 11 shows an example in the lower right hand corner of a fiber which is almost certainly wood. Asbestos cannot possibly take such a small radius of curvature without being entirely shredded. One rather curious fiber found during this investigation is shown in Figure 12. It is roughly the proper size and length but shows a most curious end structure. This is more than likely a talc body which has encountered an on end collision and become shredded during its processing. No evidence of microstructure indicative of asbestos was found.

CHEMICAL EXAMINATION OF FIBERS

Considering that little could be categorically determined to be asbestos in the material based solely upon morphology, efforts were made to use microchemical analyses of such fibers in the scanning electron microscope. These efforts involve the use of a non-dispersive X-ray detector, which analyzes the X-rays energy resulting from electron beam impingement. Areas as small as a 1,000 Angstrom fiber can be analyzed under suitable conditions. Figure 15 and 16 show traces of an oscilloscope picture in which the energy of X-rays is displayed along the horizontal scale and the number of X-rays arriving at the counting detector is displayed on the vertical scale. In Figure 15 an asbestos fiber was used as an object for X-ray analysis by reducing the electron scan image to a line which was aligned along the asbestos fiber. The asbestos fiber was imbedded in the talc matrix and was in fact part of the doped specimen. A number of elements can be identified from this trace. The ones which are certain to be part of the specimen itself rather than artifacts of the instrument are magnesium and silicon. This pattern was used as a standard and compared to other counts taken from suspect fibers in other fields of view. Efforts were made to maintain the geometry the same as that in the standard. An example of such an effort is seen in Figure 16. No strong similarities could, however, be shown in any fiber sample.

TRANSMISSION ELECTRON MICROSCOPY

Considering the lack of success in obtaining definitive results by scanning electron microscopy transmission electron microscopy was tried. Specimens were mounted by standard techniques of swirl dispersion on electron microscope grids covered with a formvar film. A large number of grids were examined and numerous examples of fibrous material were seen. Of the large number of grids examined, three examples of fibers which upon examination by electron diffraction could be classified as likely candidates for chrysotile asbestos in the shower to shower material and one example was found in the Lewin material. These are shown in Figure 16, 17, 18

and 19. In Figures 17a and 18a, electron micrographs of the transmission type show the typical stranded appearance of crysotile asbestos. In each case, Figures 16 through 19, the diffraction pattern is closely similar to that indexed for crysotile asbestos. Figure 18a is a double exposure of the diffraction pattern and the bright field micrograph. In order to avoid confusion as to the area used in diffraction, the bright spot at the center of the micrograph is a delineation of the area used in diffraction. The diffraction pattern, however, is rotated by roughly 40° from the axis of the specimen. It is felt therefore that crysotile asbestos does exist in the specimens of shower to shower and Lewin supplied to this laboratory. It is, however, further concluded that, on the basis of samples supplied to us, transmission electron microscopy can only find a total material by volume of less than 1/100 of 1 percent crysotile asbestos in the shower to shower material and less in the Lewin material.

CONCLUSIONS

The extensive investigation reported here must conclude that the scanning electron microscope by itself is unable to make distinctions between asbestos fibers within samples of talc and other such fibers of wood, wool, and talc fibers. Only the shredded appearance (not found in any specimen examined other than that purposely doped with asbestos) is the sole basis for assuming the existence of asbestos in the specimens. Efforts to use non-dispersive X-ray detection yielded a negative result, and could not be used as well. Transmission electron microscopy shows less than 1/100th of 1 percent asbestos in the material given to us. Neither scanning microscopy alone or in conjunction with microchemical analysis can be reasonably expected to prove the existence of crysotile asbestos in talc.





Figure 3

9-13-4-C



1,000X







Figure 6-B

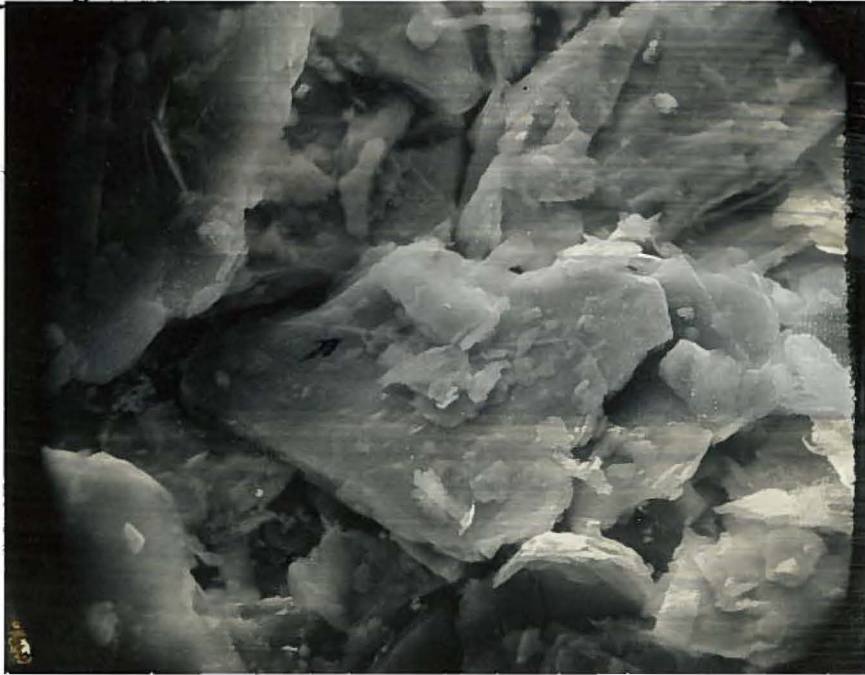
9-14-27A



1,000 X

StS

Figure 1



T4 500x

#2

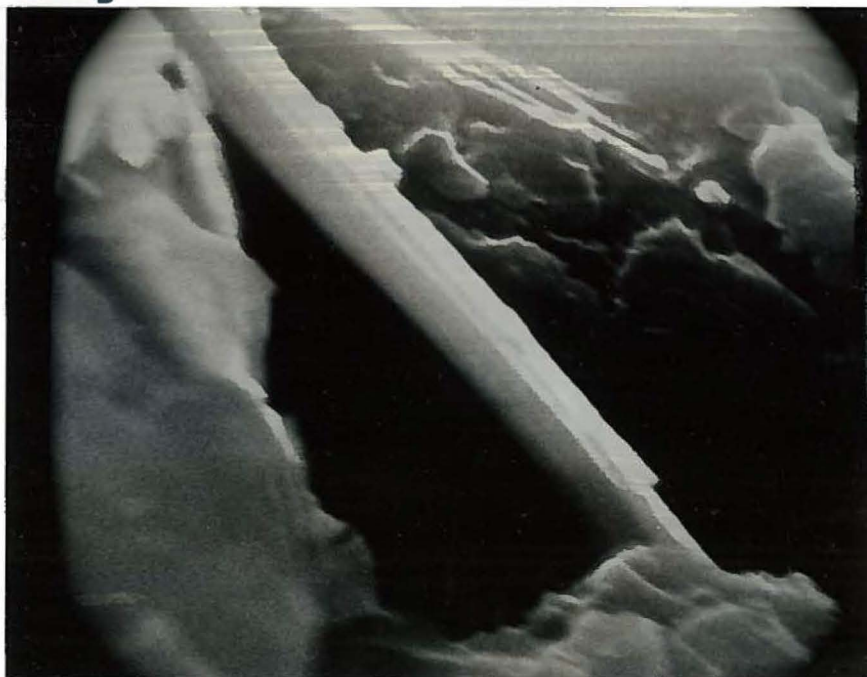
Figure 8



JE 5K

#3

Figure 9



10KX

9-44 #3



Figure 12



5K T6 Count 2

Figure 13



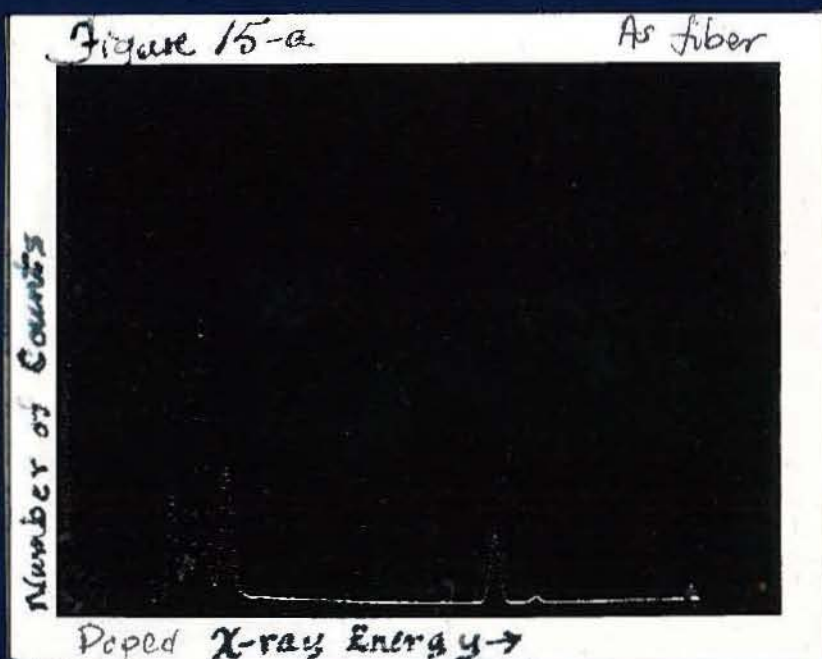
12KX 1% doped Jet.

Figure 14



1% doped 100X

1,000X



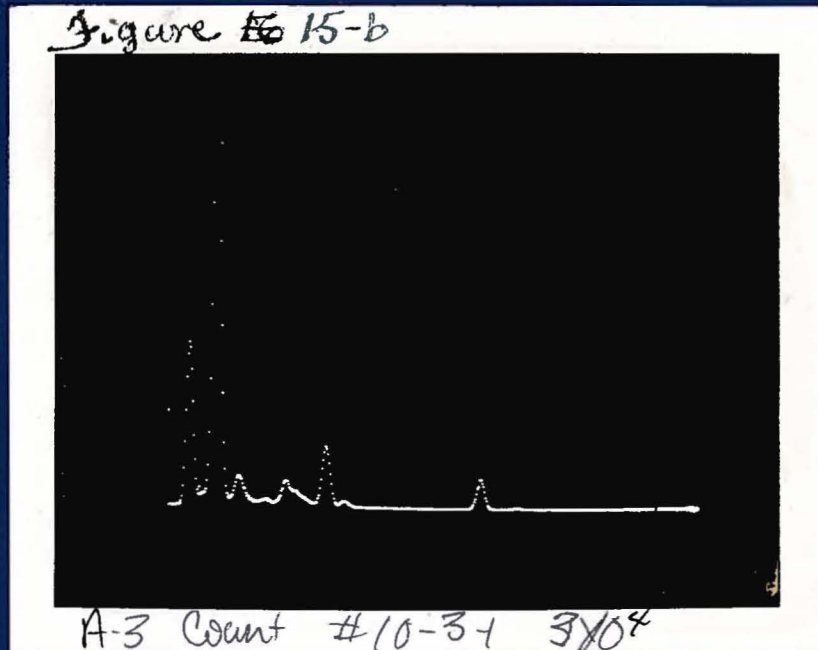
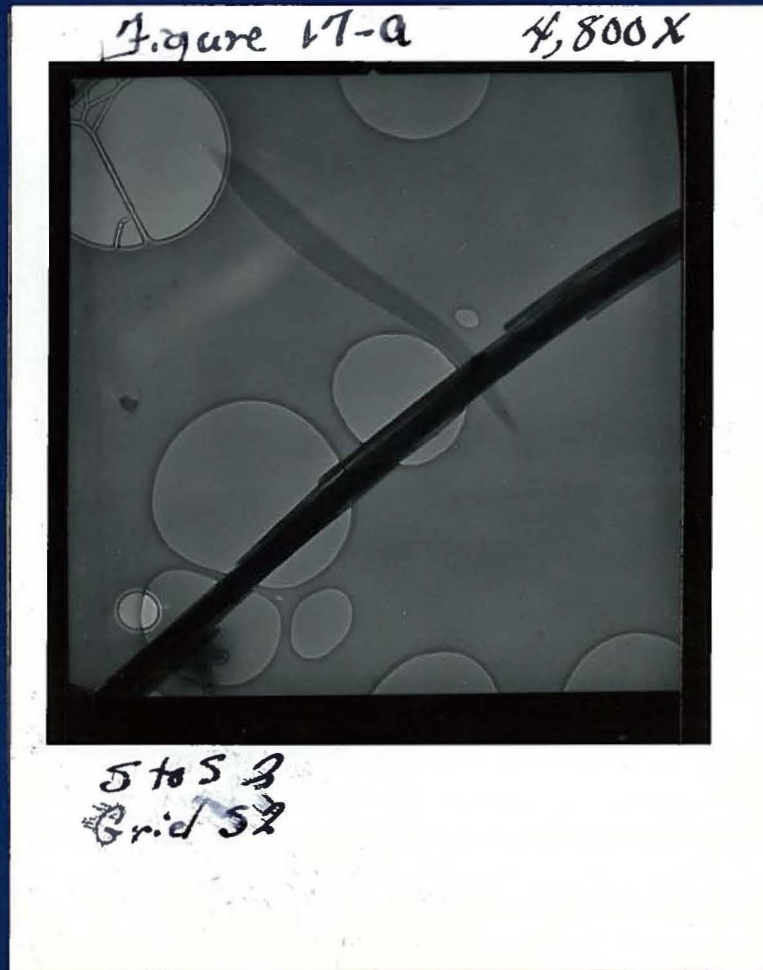


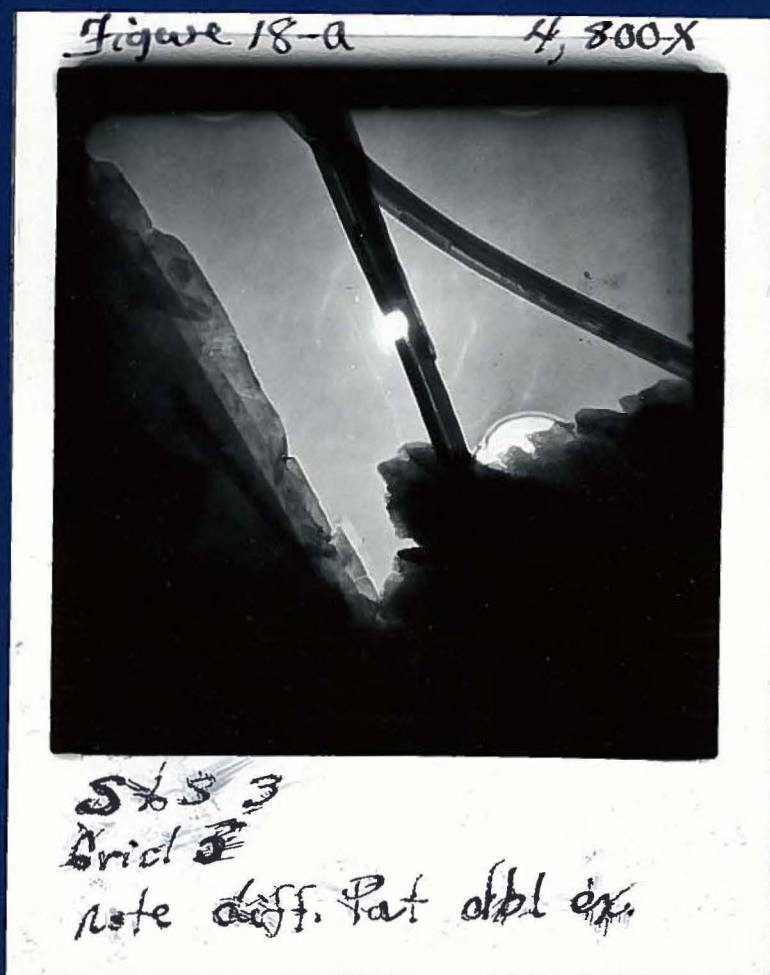
Figure 46

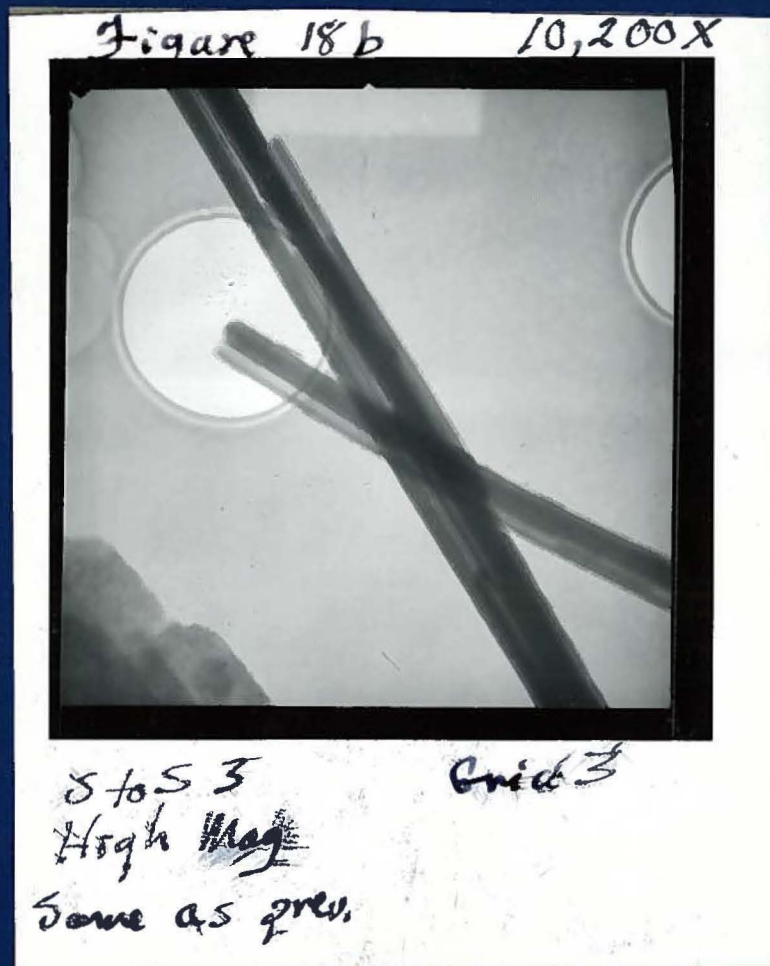


8-05-1
Grid 52













and 19. In Figures 17a and 18a, electron micrographs of the transmission type show the typical stranded appearance of crysotile asbestos. In each case, Figures 16 through 19, the diffraction pattern is closely similar to that indexed for crysotile asbestos. Figure 18a is a double exposure of the diffraction pattern and the bright field micrograph. In order to avoid confusion as to the area used in diffraction, the bright spot at the center of the micrograph is a delineation of the area used in diffraction. The diffraction pattern, however, is rotated by roughly 40° from the axis of the specimen. It is felt therefore that crysotile asbestos does exist in the specimens of shower to shower and Lewin supplied to this laboratory. It is, however, further concluded that, on the basis of samples supplied to us, transmission electron microscopy can only find a total material by volume of less than 1/100 of 1 percent crysotile asbestos in the shower to shower material and less in the Lewin material.

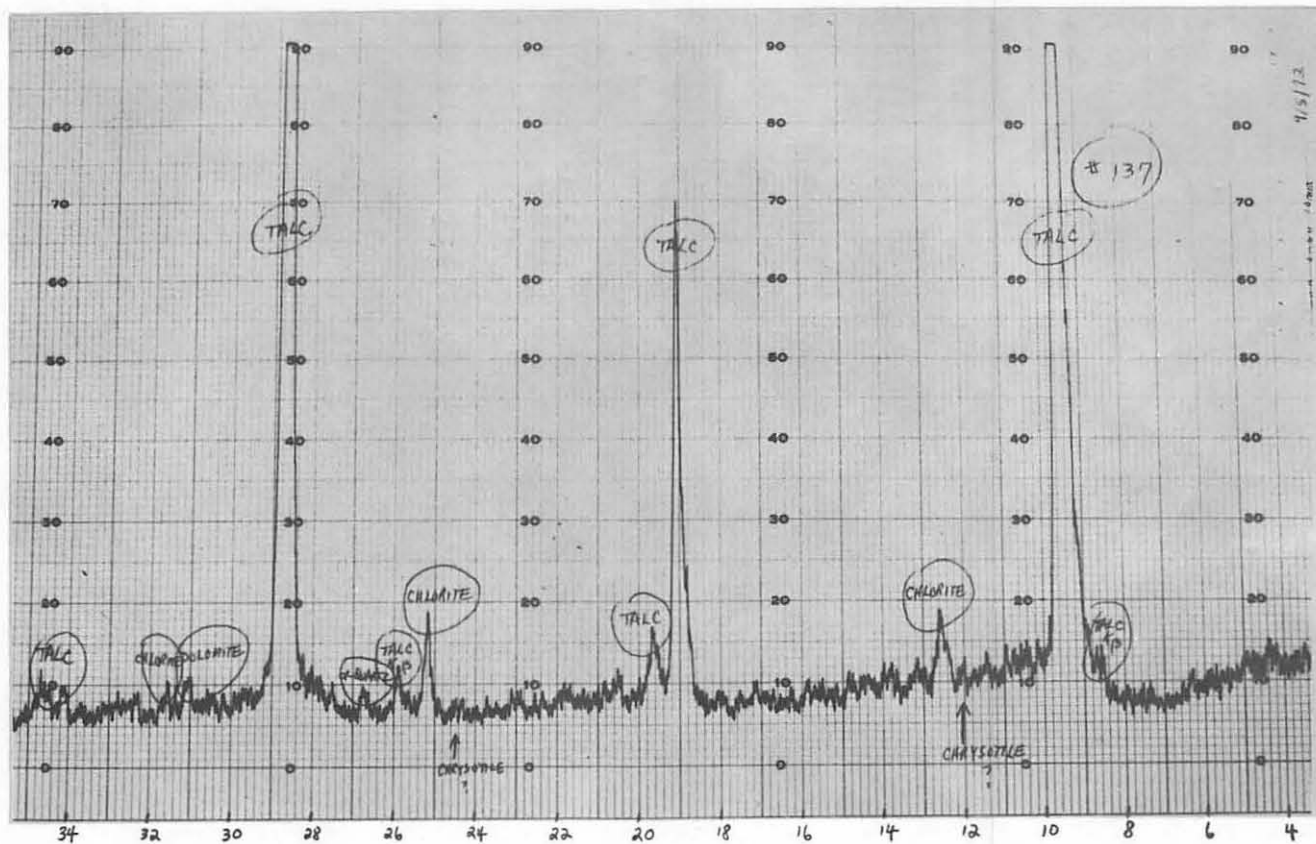
CONCLUSIONS

The extensive investigation reported here must conclude that the scanning electron microscope by itself is unable to make distinctions between asbestos fibers within samples of talc and other such fibers of wood, wool, and talc fibers. Only the shredded appearance (not found in any specimen examined other than that purposely doped with asbestos) is the sole basis for assuming the existence of asbestos in the specimens. Efforts to use non-dispersive X-ray detection yielded a negative result, and could not be used as well. Transmission electron microscopy shows less than 1/100th of 1 percent asbestos in the material given to us. Neither scanning microscopy alone or in conjunction with microchemical analysis can be reasonably expected to prove the existence of crysotile asbestos in talc.

SAMPLE NO. 137.

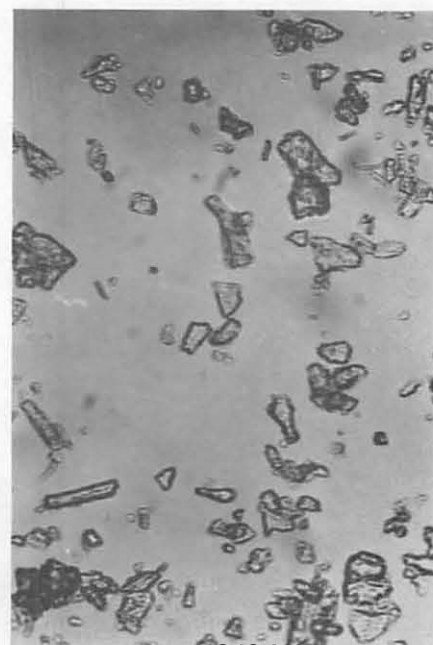
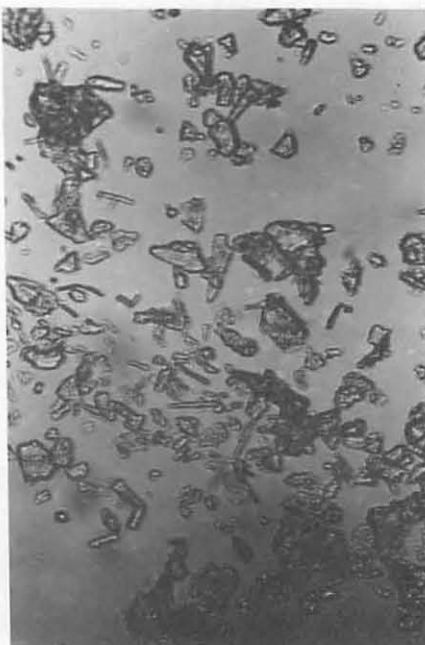
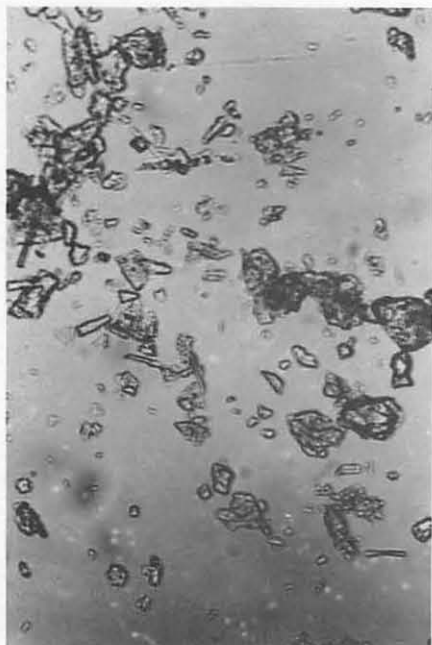
X-RAY DIFFRACTION PATTERN

Li# 0709 xy

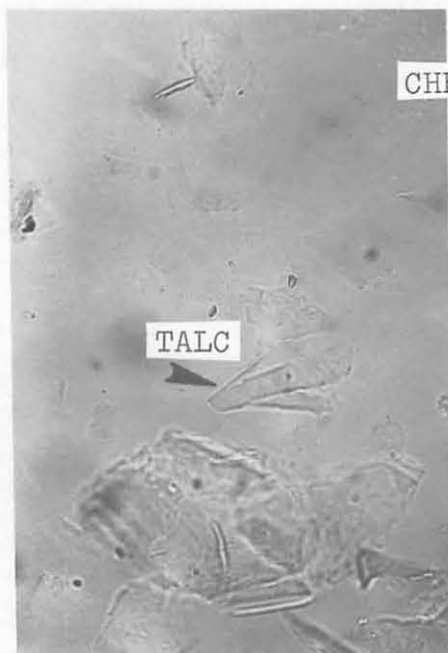
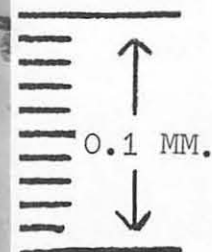
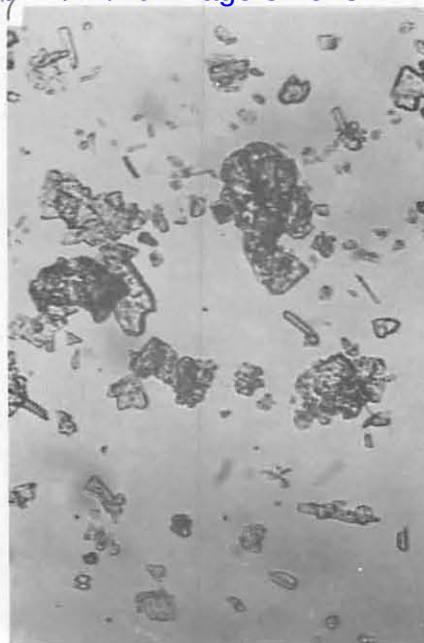
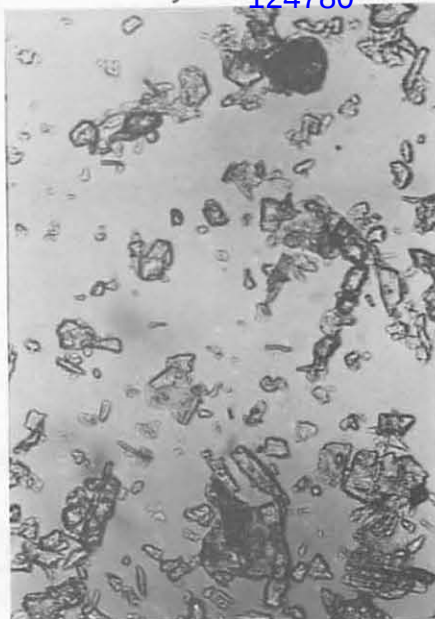
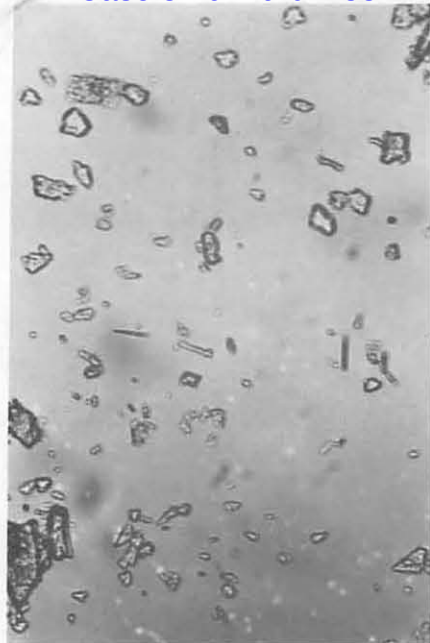


Analytical Results: TALC 89%; CHLORITE 4%; α -QUARTZ 3%; DOLOMITE 2%;
CHRYSOTILE 2%

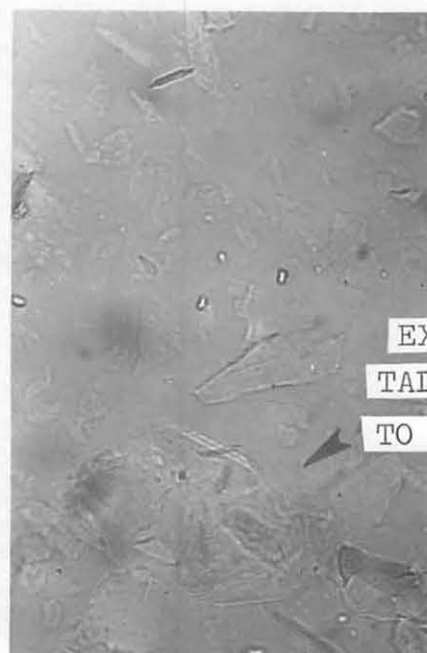
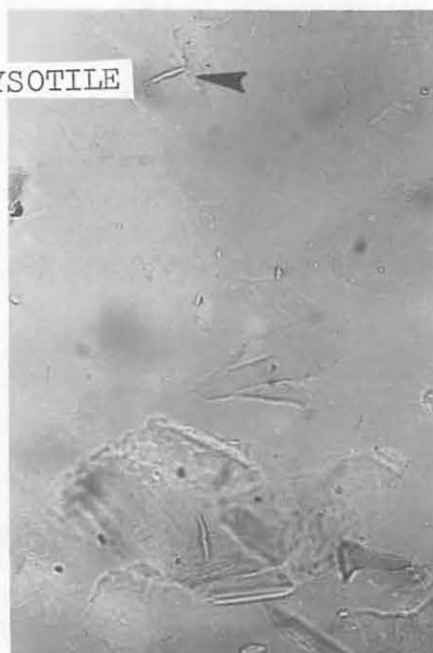
Below: PHOTOMICROGRAPHS OF DRY POWDER NO. 137



DRY POWDER, SAMPLE NO. 137



CHRYSTILE

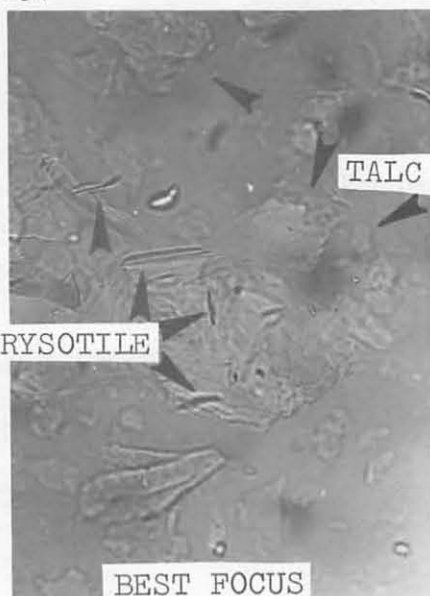


EXAMPLES OF
TALC ALTERING
TO CHRYSTILE

SAMPLE NO. 137 IN IMMERSION LIQUID OF $n = 1.580$



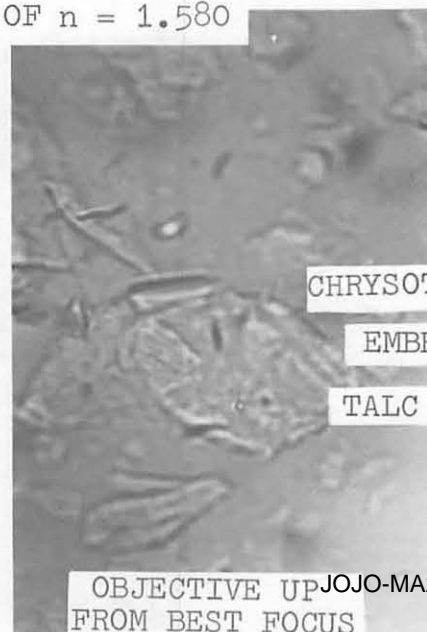
OBJECTIVE DOWN
FROM BEST FOCUS



CHRYSTILE

TALC

BEST FOCUS

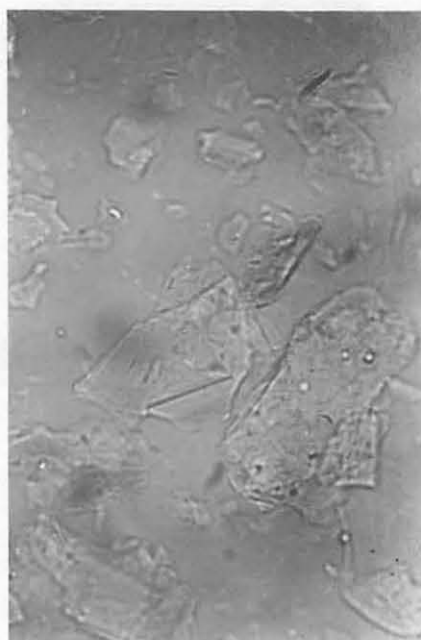
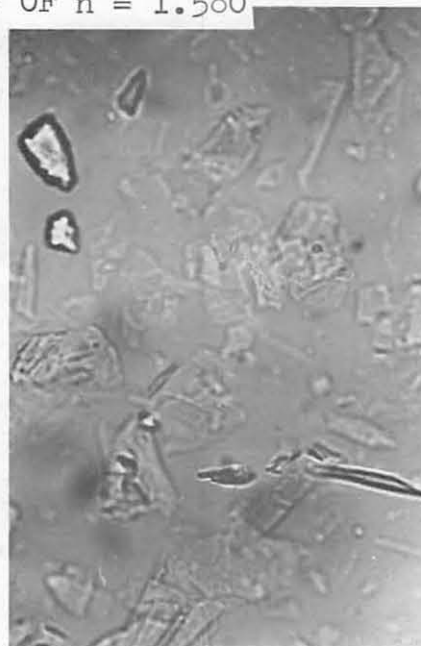
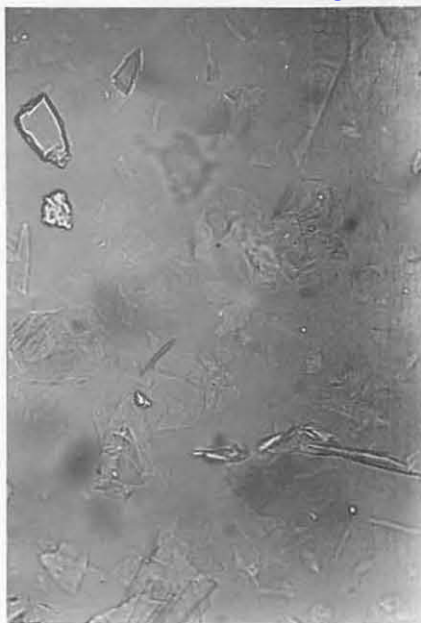


CHRYSTILE FIBERS
EMBEDDED IN
TALC PARTICLES

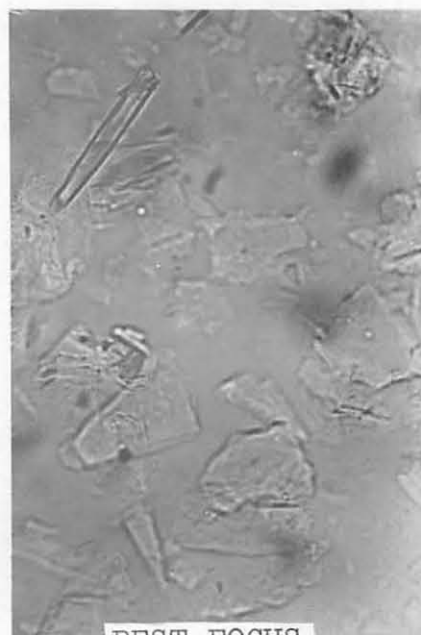
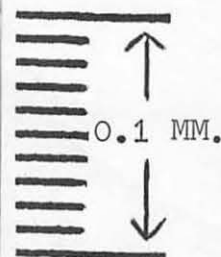
OBJECTIVE UP
FROM BEST FOCUS

JOJO-MA2546-00139

SAMPLE NO. 137 IN IMMERSION LIQUID OF $n = 1.580$



EXAMPLE OF CHRYSOTILE
FIBER EMBEDDED
IN TALC PARTICLE



EXAMPLE OF LARGEST
CHRYSOTILE PARTICLES
ENCOUNTERED IN
COMMERCIAL TALCS

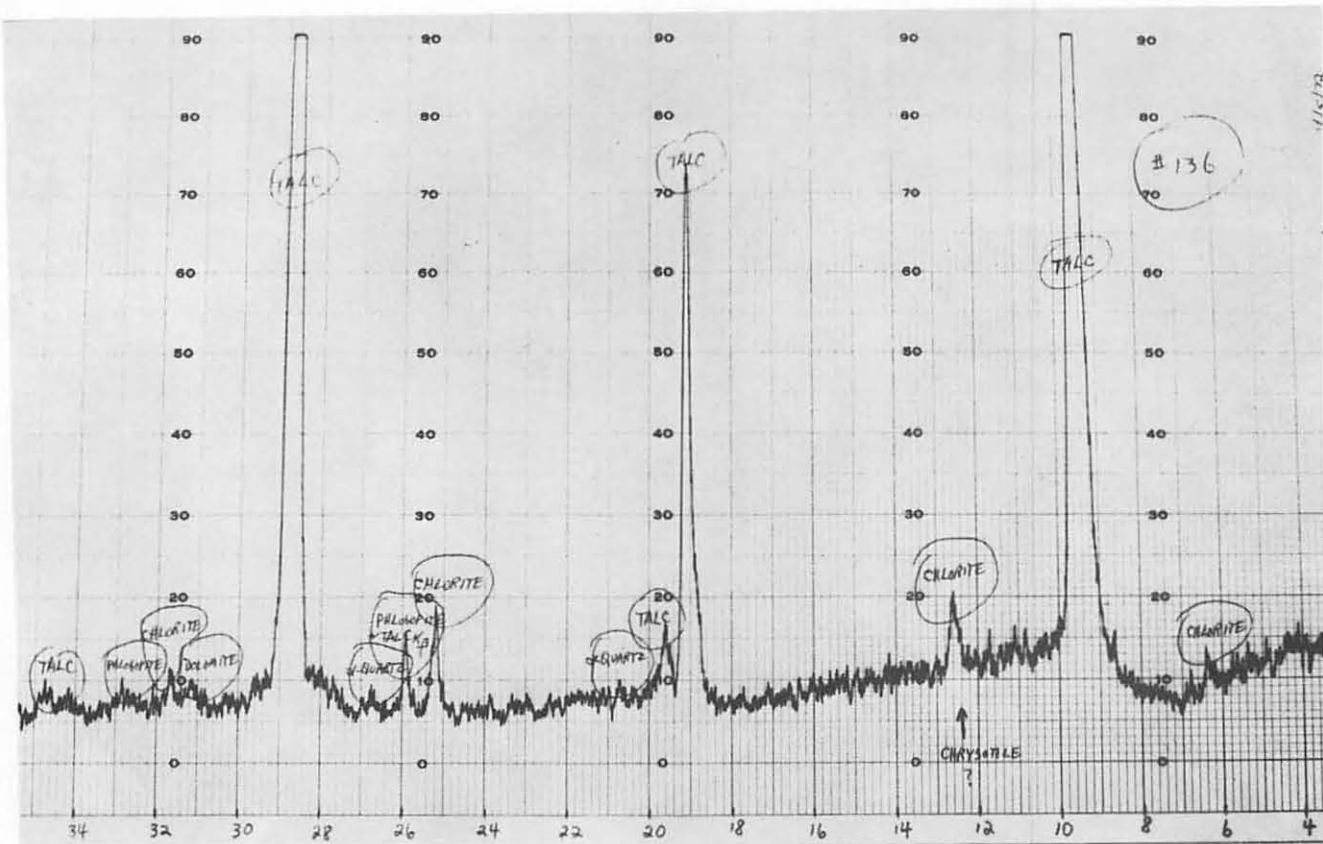
OBJECTIVE DOWN
FROM BEST FOCUS

BEST FOCUS

OBJECTIVE UP JOJO-MA2546-00140
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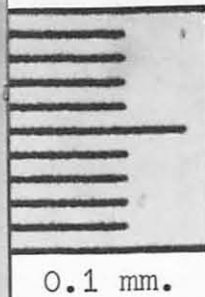
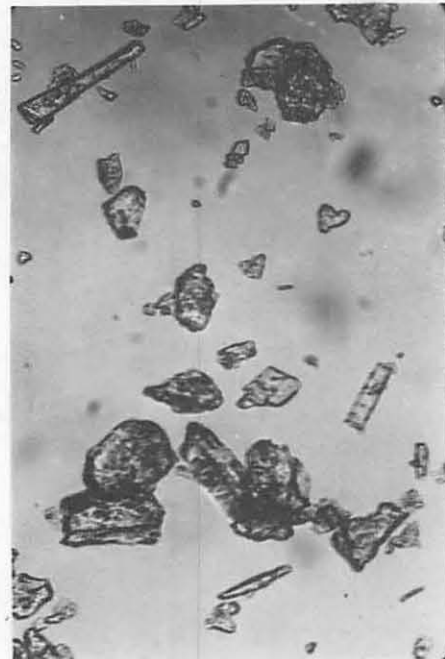
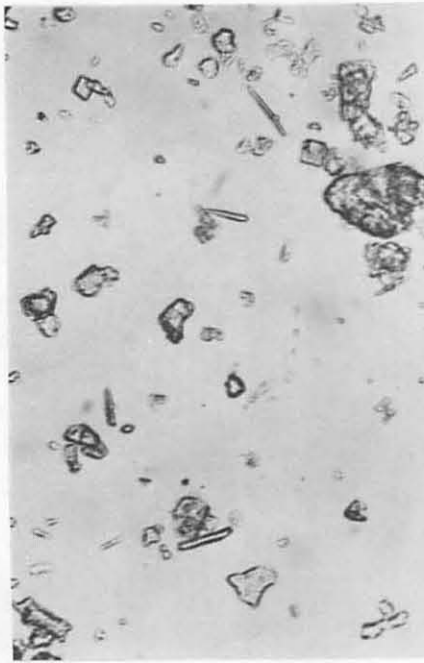
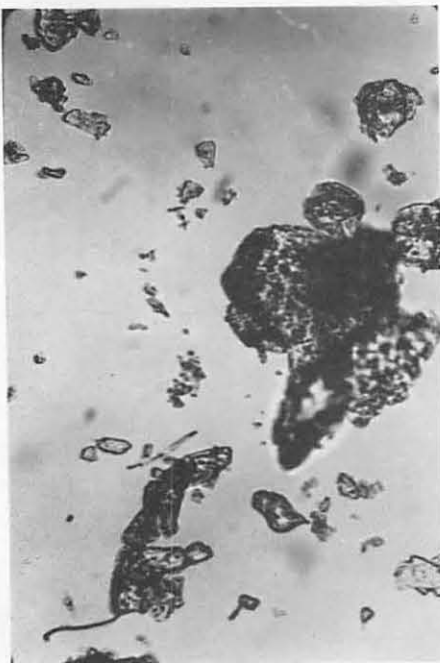
SAMPLE NO. 136.

X-RAY DIFFRACTION PATTERN

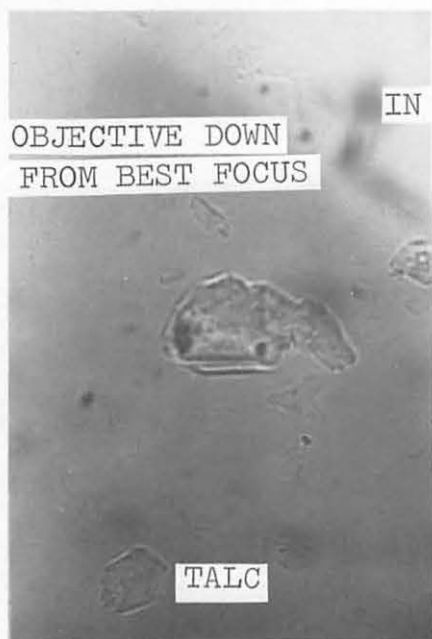
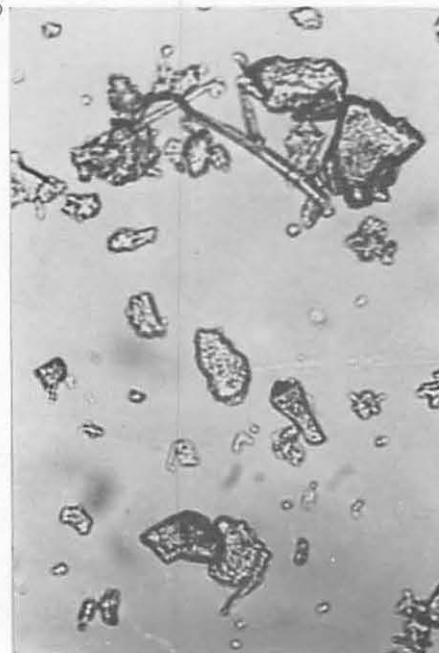
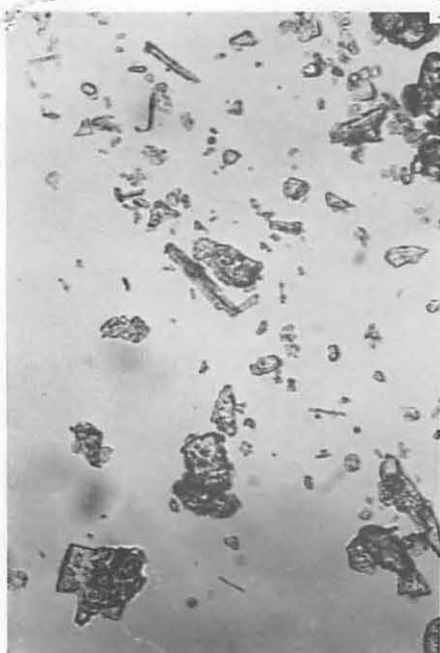


Analytical Results: TALC 87%; CHLORITE 4%; PHLOGOPITE 3%;
α-QUARTZ 2%; DOLOMITE 2%; CHRYSOTILE 2%

PHOTOMICROGRAPHS OF DRY POWDER NO. 136

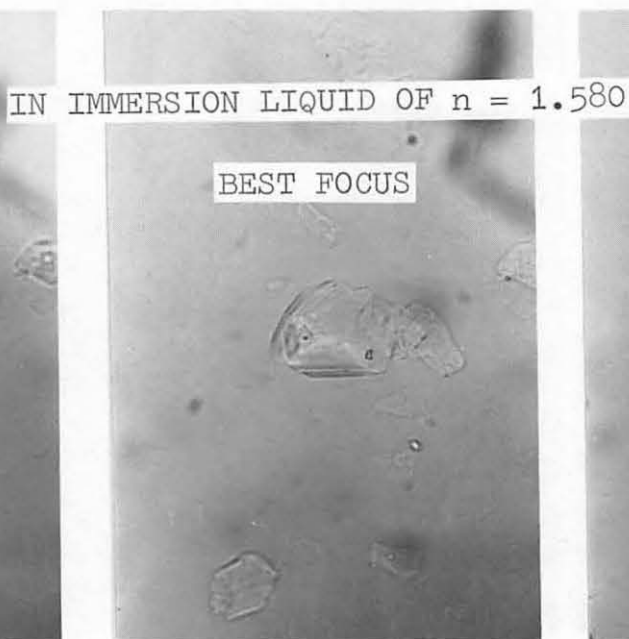


DRY POWDER, SAMPLE NO. 136



OBJECTIVE DOWN
FROM BEST FOCUS

TALC



IN IMMERSION LIQUID OF $n = 1.580$

BEST FOCUS



OBJECTIVE UP
FROM BEST FOCUS

TALC
ALTERING
TO
CHRYSTILE

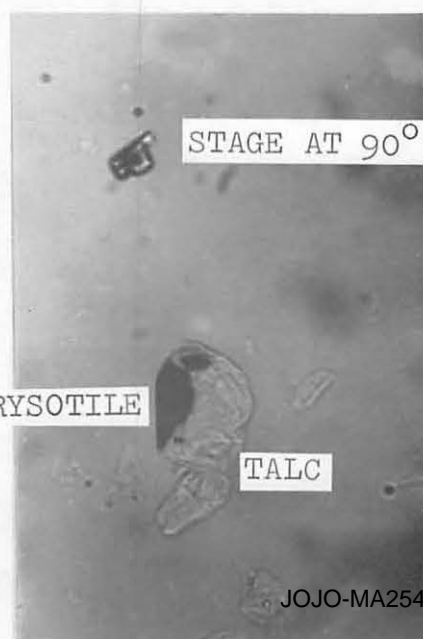


STAGE AT 0°



WITH CROSSED POLARS,

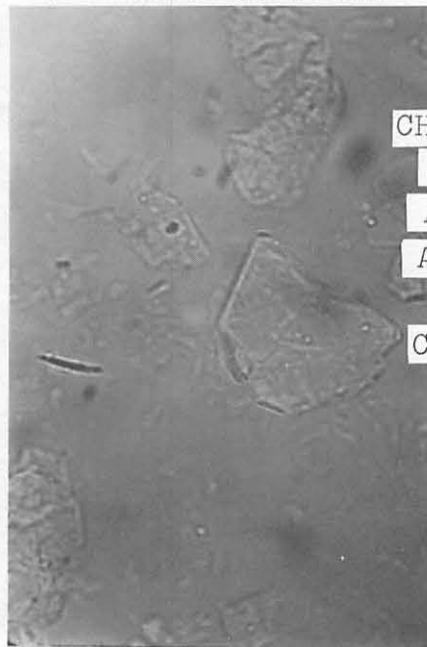
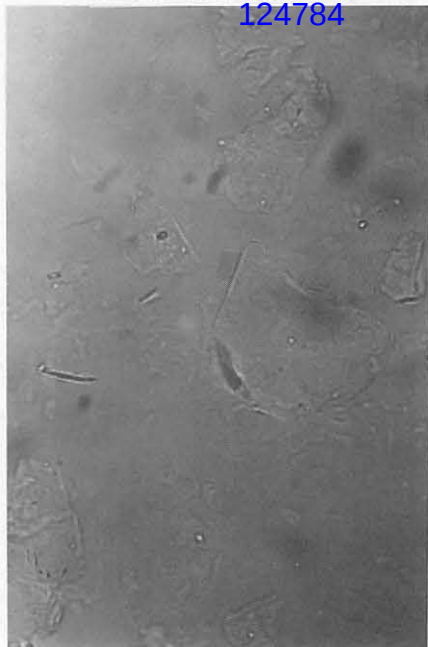
STAGE AT 45°



STAGE AT 90°

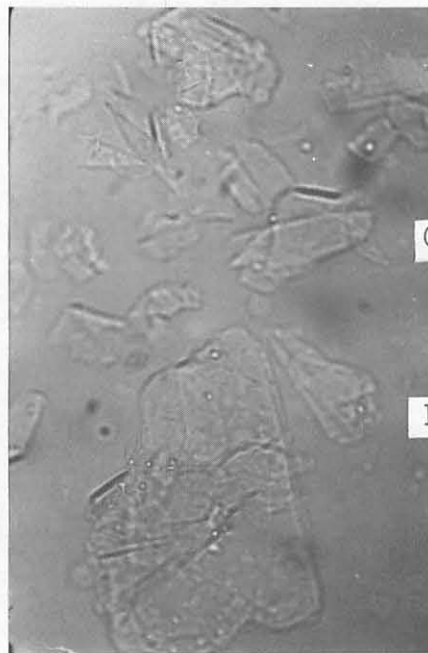
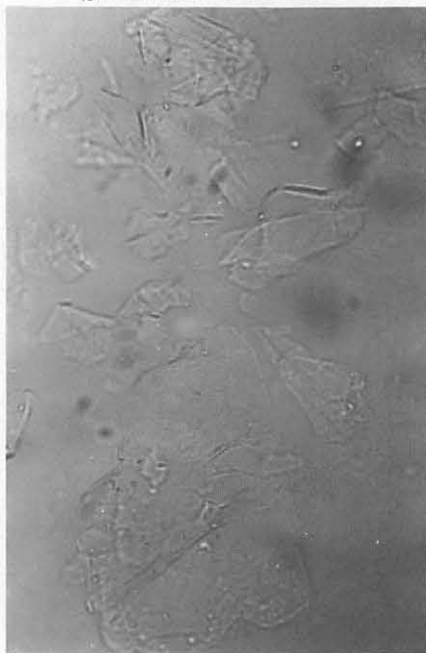
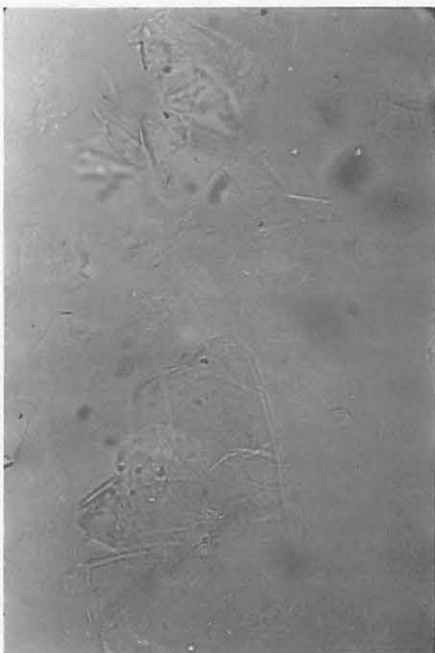
CHRYSTILE

TALC

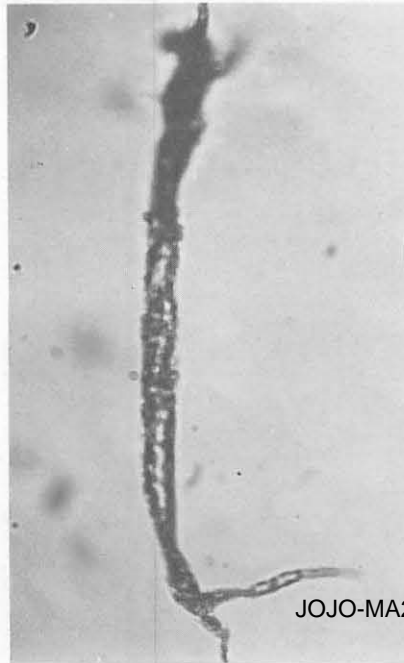


CHRYSTILE
FIBERS
AND TALC
ALTERING
TO
CHLORITE

SAMPLE NO. 136



CHRYSTILE
FIBERS
WITHIN
TALC
PARTICLES



ORGANIC
FIBER

Transmission Electron Microscope

~~Thos. Hutchinson~~, Univ. of Minn.
Particle settling in a swirl tube was used for obtaining the dispersion of "tale" on 200 mesh microscope grids. Lewin and Shower to shower were collected.

Lewin

Roughly 900 grid squares were scanned in the T.E.M. at moderate magnification. Five fibrous particles were found which gave electron diffraction patterns unmistakably ~~crysotile asbestos~~ ^{crysotile}. One highly suspect particle gave a noncrysotile diffraction pattern. The particles were generally ~~one~~ less than 30 microns in length and had the typical fiber structure. No bundle branch and join was however seen.

Shower to Shower.

~~Roughly~~ Approximately 2100 grid squares were examined. Numerous examples of fibrous structures were seen. Electron diffraction of these fibers showed no resemblance to ~~the~~ ^{crysotile} asbestos patterns. Three clear examples were found of serpentine material and which gave perfect ~~crysotile~~ ^{crysotile} patterns.

transmission electron microscope

the following list of items

For this cell line in a small tube was

used for obtaining the composition of "fat"

on 200 mesh copper grid. The grid was

exposed to a beam of electrons at 200 kV.

Results

Typically 200 grid squares were

examined in the TEM at Institute of Materials

five fibrous particles were found in the

same electron diffraction pattern. The

particles were observed. One typical example

particle gave an amorphous diffraction

pattern. The particles were generally

less than 30 nm in length and had the typical

fibrous structure. The particles were

found in the same area.

Similar to electron

microscopy, 200 grid squares

were examined. Numerous examples of

fibrous structures were seen. These

diffraction of these fibers showed no

in crystals as they were. These

particles were found at various locations

and which are typical of

Two long fibers were found singly and two others were in the same grid square and apparently in close association with a tale structure. These fibers showed clear ~~fibrous~~^{filamented} structure at high magnification.

Total Concentration Calculation (Shaw to Shaw)

Prints of the micrographs were cut to estimate the relative ~~are~~ area of asbestos and ~~non~~ tale ~~areas~~. One fifth of one square contained inconvertible asbestos, while approximately 1550 squares were covered with tale. This yielded an area percentage of one part in 7500 or roughly one one hundredth of one percent.

The total concentration of all "fibers" was near .one percent.

Summary: Neither scanning microscopy alone or aided by X-ray energy dispersive element detection can unequivocally identify erosile asbestos in concentration of a few percent. No elemental tag exists to discriminate as ~~factors~~ from other fibrous minerals present. T.E.M. with electron diffraction shows less than ~~0.01%~~ .01%
Thos E Hutchinson, Univ of Minnesota

Exhibit 73

COLORADO SCHOOL OF MINES RESEARCH INSTITUTE
GOLDEN, COLORADO

GEOLOGY AND ORE RESERVES

Hammondsville Mine
Windsor Minerals, Inc.
Windsor, Vermont 05089

Johnson-Johnson

Subject: Geological Audit
Windsor Minerals
File #124

New Brunswick, N.J.

December 4, 1970

~~Dr. T. H. Shelley~~
to
~~Dr. R. A. Fuller~~ DEC 7 70
to
Central Research File

Mr. R. J. Mortimer

Mr. R. N. Miller

Dr. R. L. Sundberg
to
File #124

The attached report completes our work on the nature
and magnitude of our ore body in Vermont from which
we manufacture Baby Powder talc.

W. Ashton
W. Ashton

CSC

J&J-0005140

JNJAZ55_000015127

TABLE OF CONTENTS

	<u>Page</u>
Introduction.	1
Objective	2
Scope	3
Conclusions	4
Recommendations	5
Discussion.	7
Location and Accessibility	7
Climate and Topography	7
Mine Development	7
Geology.	8
General Geology	8
Mine Geology.	10
Thin Section and X-Ray Analysis of Selected Rocks	13
Ore Reserves	23
Ore Reserve Calculation.	25
Ore Quality.	31
Flotation Testing.	51
Drilling Recommendations	53
Selected References	58
Appendix.	A-1
Exhibit 1, Megascopic Description of Core Samples. .	A-2
Exhibit 2, Petrographic Examinations	A-25

Tables

Table 1, Petrographic Classification and Results of X-Ray Diffraction Analysis on Rock Samples . . .	20
2, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 1-67-H.	33
3, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 6-67-H.	34

Table of Contents - continued

	<u>Page</u>
Table 4, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 21-67-H	35
5, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 34-67-H	36
6, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 35-67-H	37
7, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 36-67-H	38
8, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 37-67-H	39
9, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 38-67-H	40
10, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 39-67-H	41
11, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 40-67-H	42
12, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 41-67-H	43
13, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 44-67-H	44
14, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 45-67-H	45
15, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 46-68-H	46
16, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 49-68-H	47
17, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 50-68-H	48
18, X-Ray Diffraction and Microscopic Data, Diamond Drill Hole 55-68-H	49
19, Mineralogy and Color of Selected Vermont Core Samples.	52

Plates

Plate 1, Talc Thickness Contours (isopach map).	14, 30
2, Specimen 6H-167 Showing a Fine-Grained Talc- Chlorite Embayment in a Carbonate Particle	17
3, Electron Microprobe Traverse Across Line X-X'	18

Table of Contents - continued

	<u>Page</u>
Plate 4, Triangular Areas of Influence.	27
5, Polygonal Areas of Influence	28
6, Colors of Selected Cleaner Concentrates From Hammondsville Flotation Testing.	54

Figures

Figure 1, Electron Microprobe Traverse Across Line X-X'	A-38
---	------

Photomicrographs

1A, Specimen 2H-301 showing granulated quartz grains and lineated biotite.	A-28
1B, Specimen 2H-301 showing a highly weathered garnet crystal with an irregular chlorite inclusion.	A-28
2, Specimen 6H-139 showing a foliated mixture of talc and chlorite, a chlorite seam, and variable-sized carbonate particles	A-30
3, Specimen 6H-141 showing irregular platy talc grains set in a fine-grained foliated matrix of talc and chlorite.	A-32
4, Specimen 6H-150 showing elongated platy talc grains set in a fine-grained foliated mixture of talc and chlorite.	A-34
5, Specimen 6H-167 showing a fine-grained talc- chlorite embayment in a carbonate particle.	A-37
6, Specimen 6H-176 showing associations of talc, chlorite, and carbonate	A-41
7, Specimen 34H-507C showing platy talc grains in a foliated chlorite matrix.	A-43
8, Specimen 35H-153 showing strained feldspar laths set in a highly-weathered fine-grained opaque groundmass.	A-46
9, Specimen 35H-164 showing contact between quartz biotite schist and basalt	A-49
10, Specimen 35H-223A showing radiating tremolite- actinolite crystals	A-51
11, Specimen 35H-223B showing biotite and chlorite in a quartz matrix	A-54
12, Specimen 35H-400 showing a large inclusion composed of fine-grained talc and/or chlorite cutting foliation of host rock.	A-58

Table of Contents - continued

	<u>Page</u>
Photomicrographs - continued	
13A, Specimen 37H-367 showing a platy talc grain set in a matrix of variable-sized carbonate grains	A-62
13B, Biaxial interference figure of platy talc grain shown in Photomicrograph 13A.	A-62
14, Specimen 37H-451 showing ribbon-like platy talc seam.	A-68
15, Specimen 37H-487 showing irregularly-shaped particles composed of fine-grained talc and/or chlorite set in the felty, subfoliated host rock matrix.	A-75

Pocket
(separate) *(adjacent file)*

- 1 - Surface, Hammondsville Mine, Vermont
- 2 - Hammondsville Mine, Vermont, Drill Hole Location Map
- 3 - Hammondsville Mine, Vermont, Talc Thickness Contours
- 4 - Hammondsville Mine, Proposed Diamond Drilling
- 5 - Hammondsville Mine, Section Location Map
- 6 - Cross Section D, looking northwest
- 7 - Cross Section F, looking northwest
- 8 - Cross Section H, looking northwest
- 9 - Cross Section J, looking northwest
- 10 - Cross Section L, looking northwest
- 11 - Cross Section N, looking northwest
- 12 - Cross Section XS-2, looking northeast
- 13 - Cross Section 3-67/52-68, looking northeast
- 14 - Cross Section 34-67/55-68, looking northeast

INTRODUCTION

The Colorado School of Mines Research Institute was engaged by Johnson and Johnson to conduct a complete study of the mining and milling of talc by their wholly-owned subsidiary, Windsor Minerals. This study was authorized by letter from Mr. William Ashton on 12 June 1970, in which he accepted our letter proposal of 9 June 1970.

This report deals entirely with the geology and ore reserves of the Hammondsville Mine which is a source of cosmetic grade talc for Windsor Minerals Company. A report on Mine Safety was issued on 12 August 1970, and a report on beneficiation of the Hammondsville ore will be issued in the near future. A report, "Beneficiation of Vermont Talc Concentrates," was issued on 18 September 1969 (Project Number 290527).

OBJECTIVE

The objective of this study was to estimate an ore reserve tonnage and quality at the Hammondsville Mine. In conjunction with this, it was necessary to study in detail the geology of the mine and the mineralogy of the ore material. This latter information will facilitate future mine development and planning.

SCOPE

The study included an examination and detailed geologic mapping of all accessible parts of the Hammondsville Mine. All available drill core was examined and the talcose zones were split. One half was sent to Golden for mineralogic and chemical assaying. The remainder was replaced in **core** boxes at Windsor.

Ore reserves were estimated and, **based** upon the assay results, the amount of recoverable platy talc was also **estimated**.

Flotation tests were conducted on several samples and mineralogic and color testing was done on the cleaner concentrates.

CONCLUSIONS

The reserves at the Hammondsville Mine below the 860 Level are approximately 3.75 million tons of Indicated ore containing about 967,000 tons of platy talc. The mine life appears to be more than twenty years at the present production rate.

Ore quality varies greatly from area to area within the ore body. This is due to the variability in carbonate content and the inverse relationship between the magnesite and talc contents of the ore. On the other hand, magnesite and chlorite contents are directly related so that, in zones of high carbonate (most of which is magnesite) the color and talc content may be expected to deteriorate. In particular, it appears that the color of the finished product may deteriorate down-dip from the present mine workings. More drilling will be necessary to clarify this point.

RECOMMENDATIONS

Some additional drilling is strongly recommended. This will be necessary to ascertain whether or not the color of the recovered talc product actually does deteriorate down-dip from the present mine workings. At the same time, much of this recommended drilling will be invaluable for mine planning. Limited drilling is also necessary to improve the quality of ore reserve estimates.

A three-dimensional model showing the stopes in the south-east end of the mine, especially on and below the 860 Level should be constructed. This would be very helpful to the mine staff. Drifts and stopes could be made of some easily worked material, such as soft wood. The dimensions would not need to be precise. The main objective would be to show the relative positions of stopes. This would give a more clear picture as to what additional stoping could be accomplished. At present, Mr. Winston Dezaine, the Mine Superintendant, has a remarkably good mental picture of the deposit and appears to have done an excellent job of getting high recovery from most sections of the mine. Our impression is that stoping plans are made on the basis of visual estimates of ore quality, and an effort is made to locate pillars so that they contain poorer quality material. The success of the method depends largely on Mr. Dezaine, and if he should be unavailable for any reason, the operation would probably be severely handicapped.

Recommendations - continued

It would be well worthwhile to increase the emphasis on mine surveying and transferral of the resultant information onto level or stope maps. Monthly updating of the mine maps will allow planning for more efficient and complete extraction of the ore. The burden of this regular updating should not be placed on the Mine Manager. It should be ~~the~~ regular responsibility of a competent mining engineer.

DISCUSSION

Location and Accessibility

The mine is located on the east side of Vermont Highway No. 106, less than one-quarter of a mile north of Hammondsville, Vermont, and is easily accessible. The mill is approximately two miles to the southeast on the same road.

Climate and Topography

The area has the typical, extreme, New England climate. The topography is fairly rugged. Topographic relief varies as much as 1,000 feet per mile in many places near the mine. The topography appears to have been caused principally by glaciation, resulting in fairly steep slopes on the margins of U-shaped valleys.

The area was mostly cleared and utilized as pasture about the turn of the century but has been allowed to revert to dense forests, over most of the slopes, since that time.

Mine Development

The mine was originally opened in 1908 as an open pit. In recent years, underground workings have been developed from the wall of the pit. There are now two underground levels, the 860 Level and the 950 Level, which are designated by their elevations above sea level. A third level, at approximately 760 feet above sea level, is presently being developed by the sinking of an inclined shaft. The two existing levels are fairly extensive

Discussion - continued

(both are over 1,000 feet in length) and are connected by many stopes. The upper level, the 960, has numerous stopes extending upwards, some of which have holed through to the surface.

Geology

General Geology

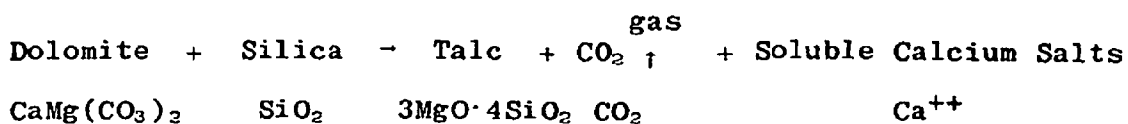
The mine is located on the north flank of the Chester Dome, a part of the Green Mountain Anticlinorium. The talc deposit is not unique, being only one of several hundred found in a fairly linear array from Newfoundland to Alabama. These deposits are found primarily in early Paleozoic rocks which were metamorphosed to schists, gneisses, and marbles. They were formerly sands, shales, and carbonates which were deposited in near-shore or shallow-water eugeosynclinal environments. These sediments were later overthrust from east to west to form the Vermontia Geanticline which is an intensely folded north-trending belt of Precambrian and early Paleozoic rocks. The State Geologic Map of Vermont indicates that the rocks adjacent to the mine area are probably Devonian (roughly 250 million years old) whereas Chidester (1951) states that they are probably Cambrian or Ordovician in age (roughly 350 to 600 million years old). Eardley (1962, p. 170) indicates that they are Silurian (between the previous two ranges) in age.

Discussion - continued

The rocks of the region are primarily metamorphosed sedimentary rocks. However, these schists, gneisses, and marbles are intruded in many places by igneous rocks (mostly acid, or granitic). Extrusive igneous or volcanic rocks are also present.

The Mount Ascutney stock, a few miles to the southeast of the mine, is a granitic intrusive body which has intruded and truncated the Standing Pond volcanics of the Devonian (Silurian?) Waits River Formation. These volcanics are reported to extend to within a mile or so of the mine and there have been a few basalt dikes noted in core from the mine area as well as within the mine workings proper.

It is the author's opinion that one or more of these igneous bodies was the source of silica, which was added to a magnesian carbonate, probably dolomite but possibly magnesite, to form talc. The generalized reaction is shown below:



Intermediate and side reactions could have given rise to a number of products which are not shown here. Among them are brucite, chlorite, magnesite, and various clays and calcium complexes.

Discussion - continued

Mine Geology

The host rocks for the ore body are mostly quartz-biotite schists and/or gneisses. These are at least a few hundred feet thick in the hanging wall of the mine. In many places they become garnetiferous and contain a few thin quartz veins, mineralized with pyrite and pentlandite. A few thin (six inches to three feet) basalt dikes are also present.

In most places along the walls of the talc body at Hammondsville, the host rock has been converted to a chloritic biotite schist. This may be the result of alteration along a stratigraphic contact or it may represent a facies change in the pre-existing rocks. This coarse-grained biotite or chlorite schist contact has been called blackwall by the miners.

The blackwall schist is used as a stratigraphic marker in mining to determine the location of the edge of the ore zone. It varies in thickness from a few inches to a few feet. Where the talc pinches out between ore lenses on the 860 Level, a thin layer of the blackwall can be followed from one lens to the next. This contact should be traceable for some distance from the mine, stratigraphically, and should aid in exploration.

The talc deposit at Hammondsville has a general tabular form with an average strike to the northwest and dip to the northeast at about 20 degrees. The talc bodies within the mine have a general lensoid to tabular form.

Discussion - continued

There are many local variations in strike and dip of both the hanging wall and, particularly, the footwall. As a result, the ore body varies radically in its strike direction and thickness. The lenticular and pod-like character of the deposit is therefore, probably not the result of tight, overturned folding but, more likely, is due to variations in thickness of the pre-talc carbonate body. Later, dynamic metamorphism would have streamlined the shape during movement.

The thicker parts of the ore body contain a core of chlorite and carbonate which is actually a chloritic marble. This has been called "serpentine" by the miners and "verde antique" by others (Chidester, 1951). The latter term, although somewhat a misnomer, is used in this report as it describes the physical appearance of the rock quite well. Technically, however, a verde antique should contain serpentine. There has been no serpentine detected by either petrographic or x-ray analyses in either the core or the rock samples from the mine. The material which makes up the core of the thicker parts of the ore body may be an intermediate alteration product from carbonate to talc or, it may be a product of retrograde metamorphism of dolomitic marble. In detail, it appears in irregular masses, crosscutting the schistosity (see the 860 and 950 Level maps), but in the broader sense it seems to occur at a definite horizon (see Cross-Section L).

Discussion - continued

The very irregular nature of the footwall makes it difficult to follow in development drifts. Consequently, it is poorly exposed in most places, or not visible at all, so that its exact position and attitude is not clear. A postulated pattern is shown diagrammatically on the 860 Level map.

Some layers and irregular blocks of **chlorite**-biotite schist occur within the talc ore body and are called "cinders" by the miners. These create a problem in development work as they may easily be mistaken for the true footwall of the deposit. To guard against development drifts being turned into the talc body, short test holes are drilled into the footwall as drifting progresses. In most, and possibly all cases, where the development drift has been turned away from the footwall because of cinders, the fact has been recognized as stoping began, and mining has been continued to the true footwall. To a much lesser extent, development drifts have been deviated from the true hanging wall because of cinders. Again, this has usually been corrected fairly quickly.

In the southeastern part of the mine, the ore body has a thick lenticular form, with a very irregular footwall. It reaches a maximum thickness of about 170 feet (including the verde antique core) but pinches rapidly along strike (see Cross-Section 4-67 to 9-66). Down-dip, the lens seems to decrease in thickness and increase in strike length so that its form be-

Discussion - continued

comes more tabular with depth (Section 3-67 to 52-68) (see also talc thickness contour map, Plate 1 and in pocket).

The lens then pinches out altogether about 2,000 feet down-dip from its outcrop at an elevation of about 500 feet. The ore body appears to pinch out abruptly and completely along its southeastern edge. Extending the drifts ~~there~~ may develop a little more ore.

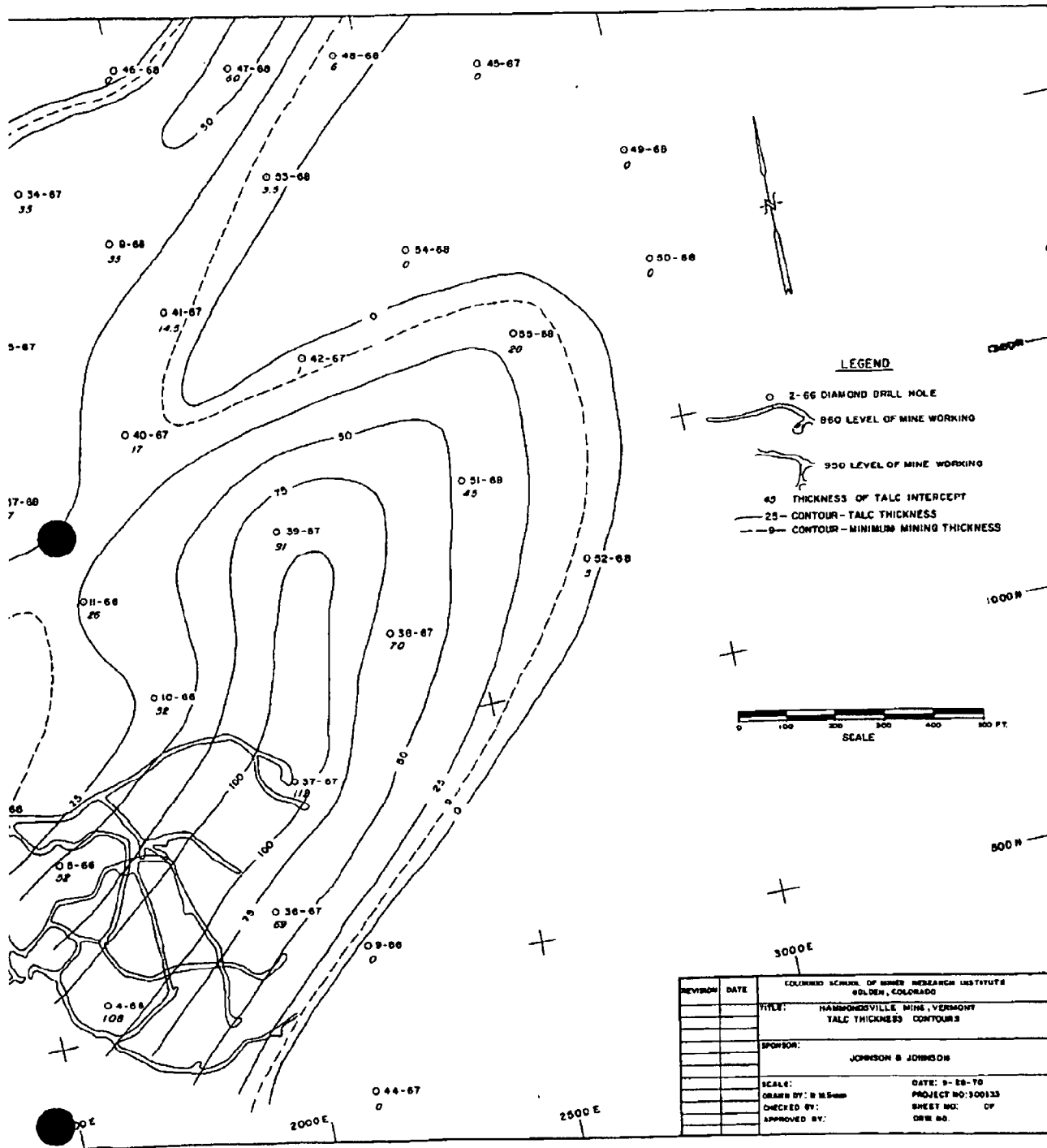
The ore body pinches out in the central part of the mine as seen on the 860 Level but this pinchout is apparently gone 400 feet down-dip, at an elevation of about 650 feet, where the ore body appears to have a continuously mineable thickness along a strike length of about 1400 feet.

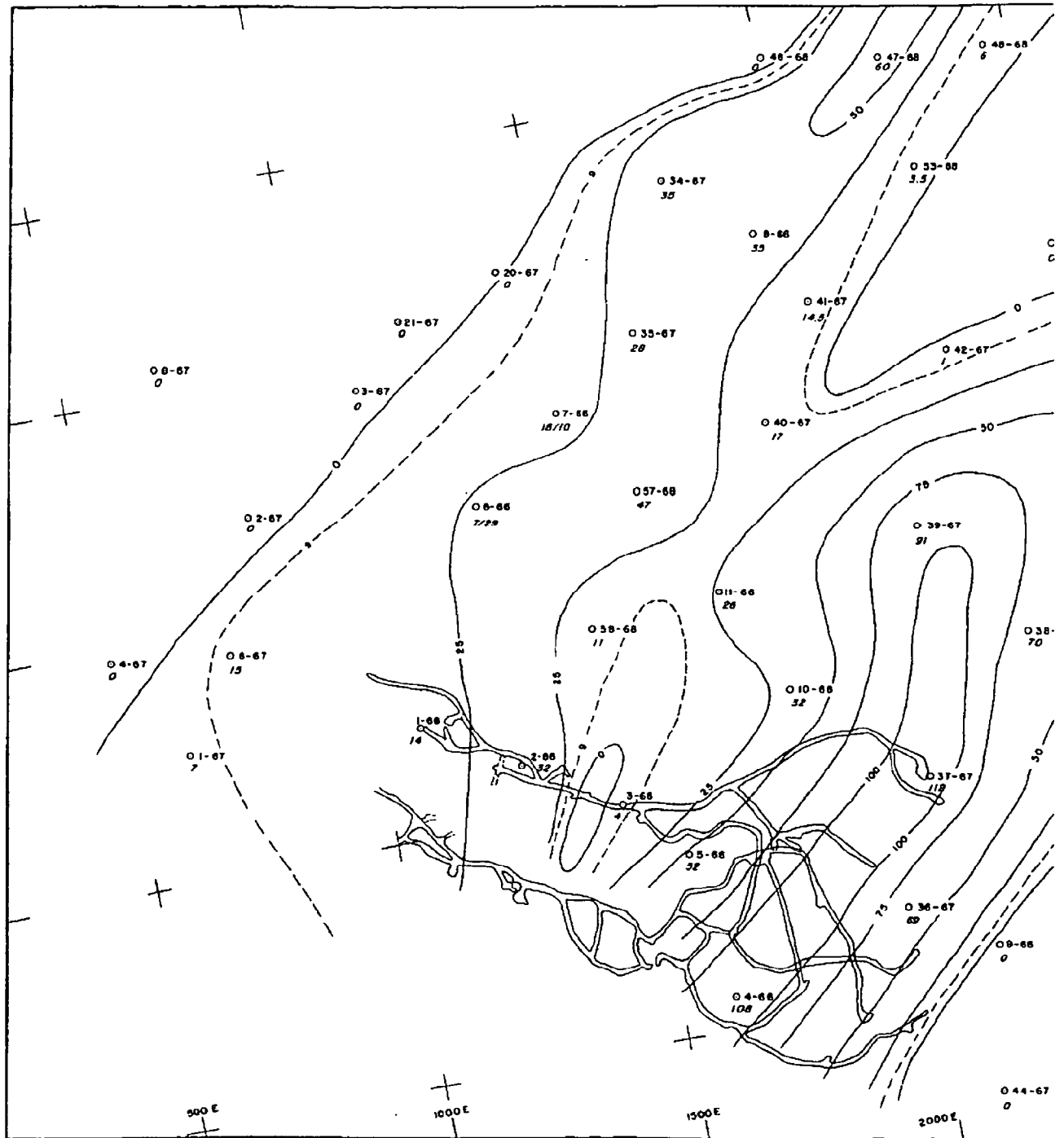
Along its northwestern edge, the deposit tends to split into talc layers which thin to the northwest. These are separated by increasing thicknesses of waste. Mining in this direction will be limited by the thickness of the thickest talc layer, rather than by the combined thickness of all the talc layers. This fact has been taken into account in both the isopach map of the ore (Plate 1) and in the ore-reserve estimate.

Thin Section and X-Ray Analysis of Selected Rocks

Thirty-eight core samples were submitted for thin-section analysis. All but a few of these were from within the ore zone.

Plate 1 - Talc Thickness Contours (isopach map)





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Discussion - continued

These were studied to determine the various rock types and to examine the relationships between the mineral phases. Some attention was paid to possible origins of the talc in order to make suggestions for further exploration work. The descriptions of the individual rock specimens will be found in the Appendix, Exhibit 2.

It was evident during this phase of the investigation that optical differentiation between chlorite and talc, when in fine grains, is nearly impossible. The refractive index, in oil, of the two minerals is nearly identical. The high-magnesium chlorite which occurs within the Hammondsville ore body is colorless, or nearly so, in thin section and is therefore nearly indistinguishable from the platy talc. Larger grains of chlorite do exhibit weak pleochroism and may be distinguished by this property.

Several thin sections were made of the host rock and, for the most part, it was found to be a quartz-biotite schist exhibiting some gneissosity. In places, this rock becomes garnetiferous. The garnets are almost without exception subhedral and appear to have been altered to clay. In many cases, the garnets have been embayed by chlorite, indicating probable retrograde metamorphism. The subhedral character of the garnets has been studied in Vermont by students at Harvard University and has been described in the literature. These are called "rolled"

Discussion - continued

garnets with the implication that they were rolled and crushed during dynamic metamorphism of the country rock. The crystal shape was assumed to have been destroyed during such treatment.

It appears from the petrographic work on the thin sections that the talc has resulted from metamorphism of a carbonate rock. This would agree with the field evidence as interpreted by the author. A particularly convincing piece of evidence was obtained in a thin section of material from Diamond Drill Hole No. 6-67 at a depth of 167 feet. A photomicrograph of a portion of that thin section is shown as Plate 2. It can be seen that the talc occurs as an embayment in a carbonate grain. This indicates that the talc was formed at the expense of the carbonate (magnesite). The thin skin or contact zone between the talc and the magnesite is chlorite. This identification of the minerals was corroborated by electron-microprobe analysis. The results of a traverse across the embayment (line X-X' on the photomicrograph) are shown on Plate 3.

Because of the partially inconclusive nature of the optical studies, x-ray-diffraction analyses were made of the rocks from which the thin sections were cut. This technique, in conjunction with the optical work, appears to have yielded a fairly accurate semi-quantitative estimate of the mineralogical constituents of each rock. In addition, x-ray analyses make it possible to differentiate between the three carbonate phases

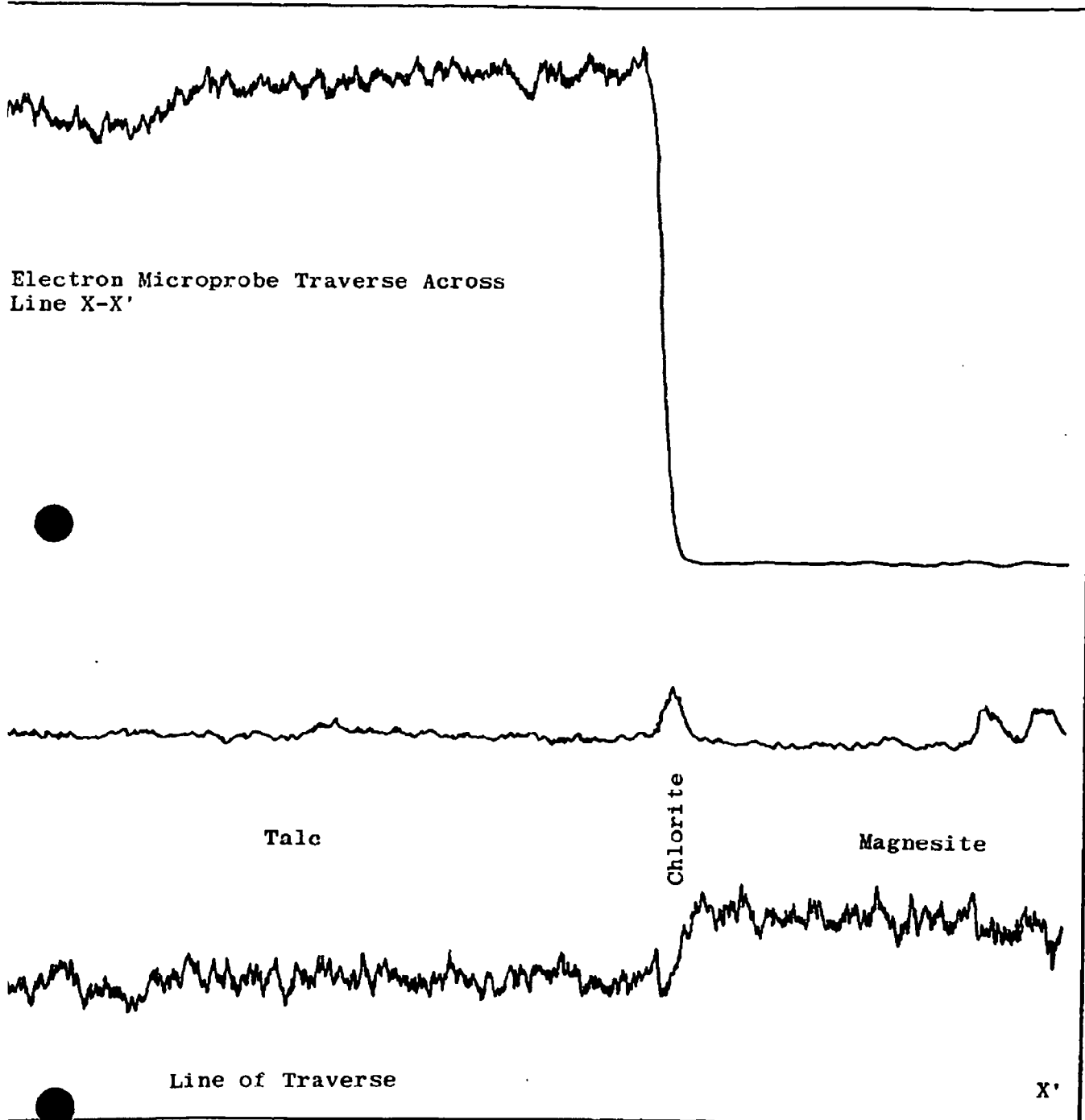


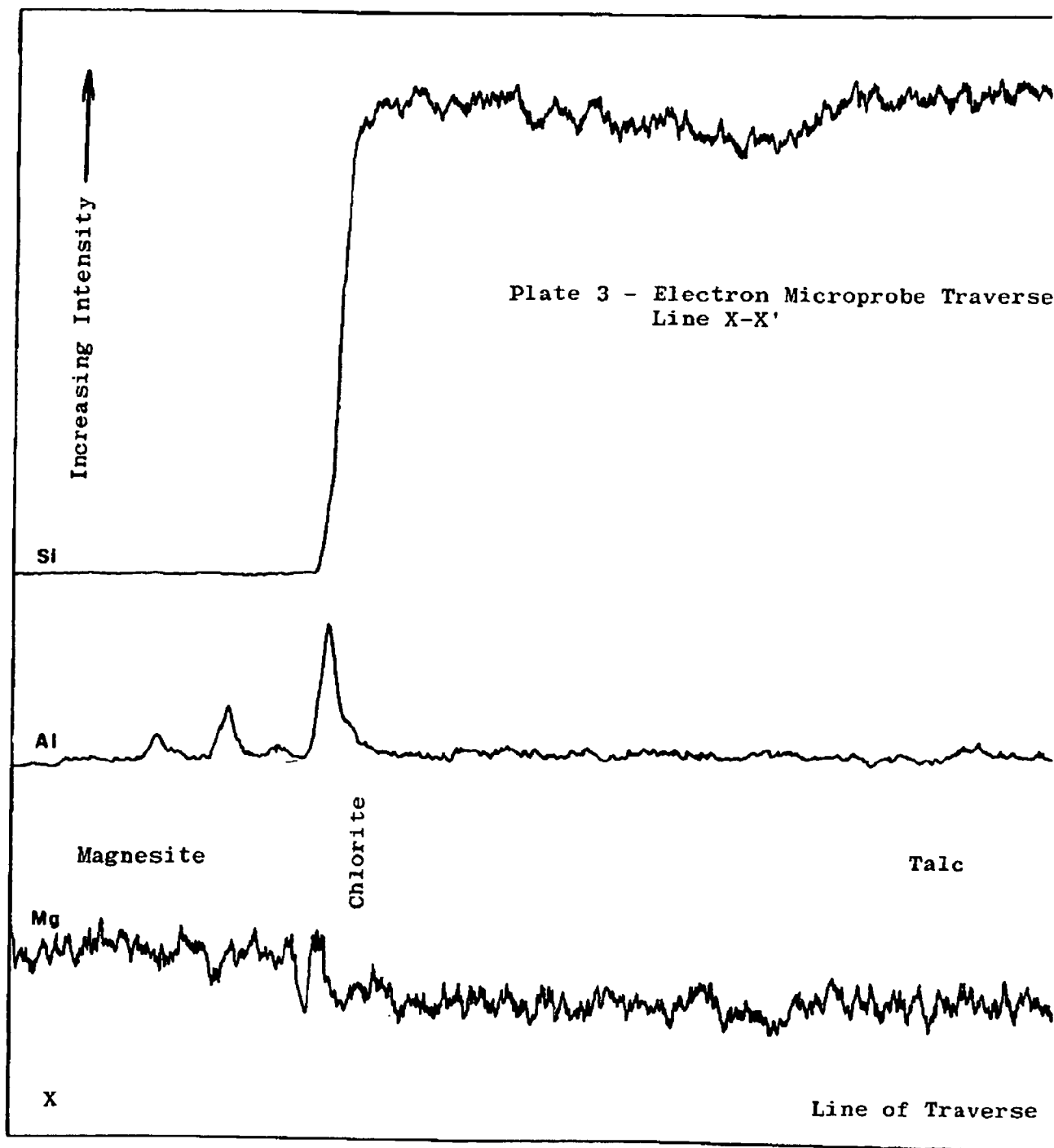
Plate 2 - Specimen 6H-167 showing a fine-grained talc-chlorite embayment in a carbonate particle.

- (A) Fine-grained talc-chlorite intermixture.
- (B) Magnesite, MgCO_3 , particle.
- (C) Chlorite seam.
- (D) X-X' approximate electron microprobe traverse shown in Plate 3.

Scale
┌
0.1 mm

Crossed polarizers





Discussion - continued

of these rocks (magnesite, dolomite, and calcite) as well as between chlorite and talc.

The following table (Table 1) summarizes the results of the petrographic and x-ray examinations of the rocks submitted for thin-section analysis.

The consensus of opinion in the available literature about the genesis of the talc bodies in Vermont seems to be that they formed as an alteration product from ultrabasic intrusive igneous rocks (Chidester, et. al., 1951; Trauffer, 1964; Gillson, 1927). Chidester (1951) however, seems to suggest that the talc at the Hammondsville Mine might be the result of metamorphism of a carbonate body. This is the opinion of this writer.

A postulated paleo-environment which would result in the formation of the Hammondsville ore body as we see it today may have resembled in many ways that environment found presently in the Gulf of Mexico. This environment would have consisted of a relatively low-lying land surface from which sands and muds were derived, and a fairly shallow sea (a eugeosyncline--Eardley, 1962, p. 169) which would receive these sediments. Carbonate deposition was certainly taking place, possibly in the form of reefs. These may have been either discontinuous or eroded so that the topography resembled in many ways the present-day channeling seen in the carbonate reefs between Florida and the Bahamas. Filling of these channels with clastic sediments

TABLE 1

GRAPHIC CLASSIFICATION AND RESULTS OF
DIFFRACTION ANALYSIS ON ROCK SAMPLES

Relative X-Ray Diffraction Peak Heights (Cm)							
<u>Trem/Act</u>	<u>Chlorite</u>	<u>Quartz</u>	<u>Calcite</u>	<u>Dolomite</u>	<u>Magnesite</u>	<u>Mica</u>	<u>Feldspar</u>
		1.0		0.3		1.3	
	0.7			0.3	0.2	Tr.	
	0.5			0.1	0.4		
	0.5			3.2	0.5		
	0.2			Tr.	0.6		
	0.1			0.7	3.5		
	0.4	0.5				0.6	
	1.3	0.2					
				0.6			
						0.3	0.8
		0.5				0.4	0.4
0.4	0.2						
		2.4	0.3			0.8	
	Tr.	1.1				0.8	
	0.4			0.7			
	1.7			0.3			
	0.4			0.6	1.7		
	0.7			0.1	0.1		
	Tr.			0.1	1.7		
	0.2			1.2	Tr.		

continued

TABLE 1

PETROGRAPHIC CLASSIFICATION AND RESULT
X-RAY DIFFRACTION ANALYSIS ON ROCK SAM

D.D. Hole	Interval	Rock Classification	Relative X-Ray Diffrac				
			Talc	Trem/Act	Chlorite	Quartz	Ca
2-67-H	301	Garnetiferous quartz- biotite augen schist				1.0	
6-67-H	139	Schistose augen marble	0.9		0.7		
	141	Augen marble schist	2.0		0.5		
	150	Augen marble schist	2.5		0.5		
	167	Talc-chlorite augen schist	4.5		0.2		
	169	Schistose augen marble	2.6		0.1		
	176	Talc-chlorite schist	11.8		0.4	0.5	
34-67-H	507-C	Chlorite schist	0.7		1.3	0.2	
	518	Augen marble schist	1.8				
35-67-H	153	Basalt	0.2				
	164	Contact between basalt and quartz-biotite schist				0.5	
	223-A	Chlorite schist		0.4	0.2		
	223-B	Garnetiferous biotite- chlorite-quartz schist				2.4	0..
	223-C	Chlorite-biotite- quartz schist	0.2		Tr.	1.1	
	398	Talc-chlorite schist	3.6		0.4		
	400	Chlorite schist	0.3		1.7		
36-67-H	437	Augen marble schist	1.0		0.4		
	438	Schistose augen marble	0.9		0.7		
37-67-H	367	Schistose marble	0.9		Tr.		
	388	Talc-chlorite augen schist	0.9		0.2		

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Relative X-Ray Diffraction Peak Heights (Cm)

<u>Trem/Act</u>	<u>Chlorite</u>	<u>Quartz</u>	<u>Calcite</u>	<u>Dolomite</u>	<u>Magnesite</u>	<u>Mica</u>	<u>Feldspar</u>
0.2				2.6	0.2		
0.6				0.8	0.1		
0.6					4.0		
0.5				2.3			
0.6				0.7	0.2		
1.5				0.3	0.7		
2.6							
1.2							
0.7	0.6						
1.0					0.3		
0.3				0.1			
0.7				0.9	0.3		
0.7				0.2	Tr.		
0.4	0.3			0.2			Tr.
0.9	0.7			0.2	Tr.		
0.9				0.3	0.2		
0.2				0.1	0.4		
0.4				0.1	0.9		

histosity.
sity.

Table 1 - continued

D.D. Hole	Interval	Rock Classification	Relative X-Ray Diffrac				
			Talc	Trem/Act	Chlorite	Quartz	Ca
37-67-H	400	Talc-chlorite augen schist	0.6		0.2		
	440	Marble schist	3.3		0.6		
	450	Augen marble schist ^{1/}	1.7		0.6		
	451	Augen marble schist ^{1/}	1.6		0.5		
	452	Augen marble schist ^{1/}	2.4		0.6		
	453	Verde antique	1.5		1.5		
	481	Chlorite schist	1.1		2.6		
	485	Chloritic marble schist	1.5		1.2		
	487	Chlorite-talc marble schist ^{2/}	2.0		0.7	0.6	
	490	Chlorite-talc marble schist ^{3/}	4.0		1.0		
	491	Contact between chloritic marble schist and chlorite schistose marble	0.9		0.3		
	504	Chlorite marble schist	1.6		0.7		
	512	Schistose marble	1.7		0.7		
38-67-H	494	Basalt			0.4	0.3	
39-67-H	458	Chlorite-talc schist	2.3		0.9	0.7	
	532	Chlorite-talc marble schist	2.2		0.9		
	534	Schistose augen marble	1.3		0.2		
	544	Schistose augen marble	1.0		0.4		

1/ Could possibly be classified as verde antiques.

2/ Contains distinct talc seam perpendicular to schistosity.

3/ Contains distinct talc seam parallel to schistosity.

Tr. Trace detected.

Discussion - continued

followed by metamorphism during the thrusting of great fault blocks from east to west would result in isolated pods or bodies of carbonate rocks surrounded by schists and gneisses. Dynamic and regional metamorphism would further modify this picture until these isolated bodies of carbonate rock (probably marble) would assume lenticular or tabular shapes within ~~the~~ schists and gneisses.

An extremely high percentage of early Paleozoic carbonates are dolomites. Nearly every talc deposit which has been examined by the author has been the result of silicification of a dolomite, usually of early Paleozoic or Precambrian age. The chemical change is fairly simple. At low temperatures and fairly low pressures, the magnesium present in the dolomite is combined with silica, probably from an igneous source. The carbonate is driven off as carbon dioxide. The abundance of chlorite within the Hammondsville ore body may be explained as a product of retro-grade metamorphism of the dolomitic marble from which the talc was formed.

Evidence for the hypothesis offered above is rather abundant. Mount Ascutney is suggested as a source for the silica, and, consistent with the above theory, there is a very high remnant carbonate content within the ore body (25 to 50 percent). The complete absence of any igneous minerals (serpentine or relict ultrabasic minerals) within the Hammondsville ore body (other than the basalt dikes--which are later) is negative evidence against an

Discussion - continued

igneous origin.

If the above hypothesis is correct, exploration could be tied closely to stratigraphy. Prospecting along the zone of contact between the hanging and footwall rocks (east and south-east of the mine) would be indicated. The ~~geo~~geologic map of the state of Vermont indicates that the ore ~~body~~ **is** found on the nose of a small anticlinal structure abutting against the Mt. Ascutney stock to the southeast. It seems quite likely to the author that more talc deposits could be found along the stratigraphic contact on this structure.

Ore Reserves

The ore reserves remaining in the mine below the 860 Level are estimated to be 3,736,000 tons. This ore contains an estimated 967,000 tons of platy talc. These figures were arrived at by assuming a 60 percent mining extraction and a minimum mining thickness of nine feet. These latter two figures were furnished by the management at Windsor Minerals.

The ore is considered Indicated on the basis of the ore classification system adopted by the U.S. Geological Survey and the U.S. Bureau of Mines (Senate, 1947) which appears below.

"'Measured ore' is ore for which tonnage is computed from dimensions revealed in out-crops, trenches, workings, and drill holes and for which the grade is computed from

Discussion - continued

the results of detailed sampling. The sites for inspection, sampling, and measurement are so closely spaced and the geological character is so well defined that the size, shape, and mineral content are well established. The computed tonnage and grade are judged to be accurate within limits which are stated, and no such limit is judged to differ from the computed tonnage or grade by more than 20 per cent.

"'Indicated ore' is ore for which ~~tonnage~~ and grade are computed partly from specific measurements, samples, or production data and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to outline the ore completely or to establish its grade throughout.

"'Inferred ore' is ore for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition for which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred ore should include a statement of the special limits within which the inferred ore may lie."

Ore reserves were calculated on the basis of 175 pounds per cubic foot of rock in place. This factor is commonly used for the California talc ore (Rasmussen, Charles Pfizer Co., Personal Communication, 1970). It also is within 10 percent of a theoretical value (McKinstry, 1948) and an empirical value obtained

Discussion - continued

from a large piece of Hammondsville ore. The grades assigned to the various drill holes were obtained by assaying the available core. Those drill holes for which no core was available were assigned the average value obtained for all of the core which was assayed. The estimate does not include any ore above the 860 Level and would have to be increased by the amount of recoverable ore still remaining above that level.

Ore Reserve Calculation

All ore-reserve estimates depend upon the analysis and weighting of a body of sample data. When samples are randomly spaced throughout a large deposit the question of sample weight, or volume of influence, becomes extremely significant. When properly weighted, irregularly spaced samples can provide a very precise estimate of the true tonnage and grade of the deposit.

In the case of the Hammondsville ore body, the reserve estimate is based upon data from 40 diamond-drill holes. Several methods of weighting drill-hole data were considered. Two of these, the polygonal and the triangular area-of-influence methods were used independently and the results were within about 10 percent of the final calculation utilizing a combination method.

The triangular area-of-influence method is probably the simplest and most widely used method of weighting irregularly

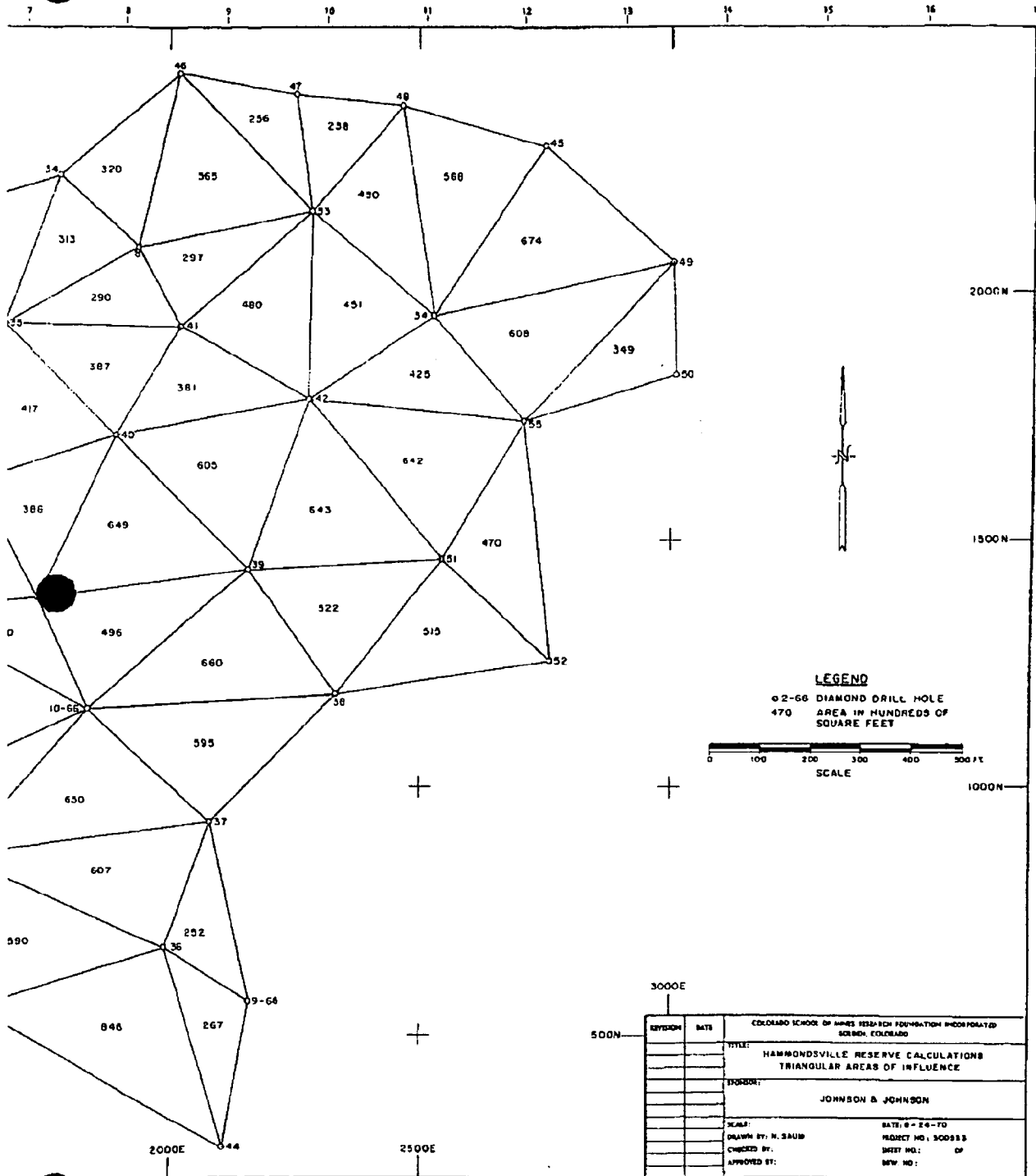
Discussion - continued

spaced drill samples. The area is divided into triangles with a drill hole at each corner as shown in Plate 4. The volume is computed from the area of the triangle and the average thickness of the ore in the three holes. A weighted average of the grade in the three holes is assigned to this volume. Extreme variations in thickness, or grade, or drill-hole spacing will distort the results obtained through the use of this method.

The polygonal area-of-influence method is quite similar to the triangular method. The polygons are developed by drawing bisectrices on each of the lines joining adjacent drill holes. The intersections of the bisectrices become the corners of a polygon with a drill hole at the center. The volume is determined by using the area of the polygon and the thickness of the ore intersection in the drill hole. Grade of the material in the drill hole is assigned to this volume. As in the triangular area-of-influence method, the wide spacing of the drill holes causes problems. With polygons only, an inordinate area of influence is assigned to some of the drill holes because of the wide spacing, and the method was not used for this reason. The areas of influence obtained through the use of this method of weighting are shown in Plate 5.

Other methods of calculating reserves involve the use of isopachs (contours of equal thickness) or cross-sectional areas

Plate 4 - Triangular Areas of Influence



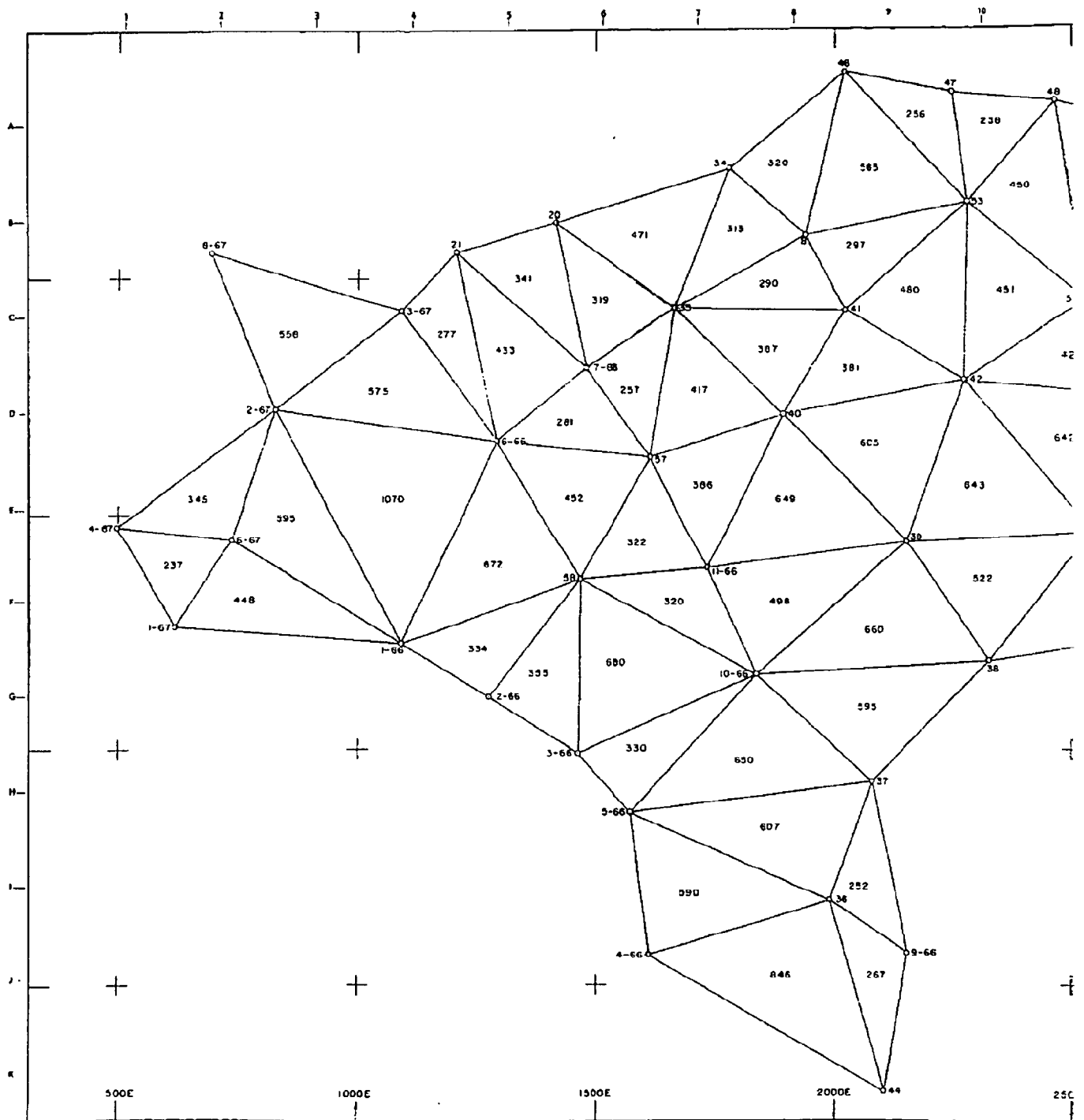
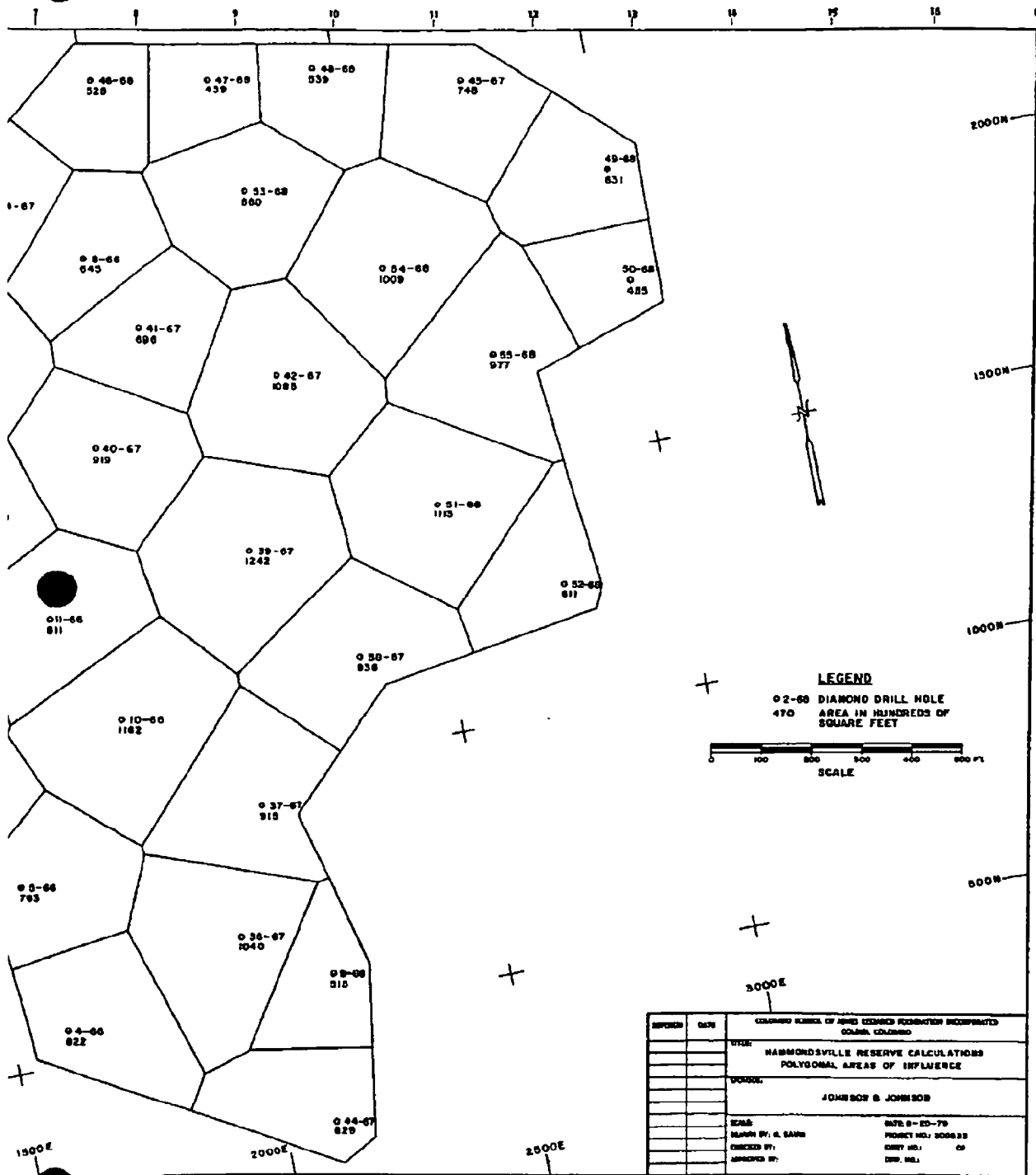
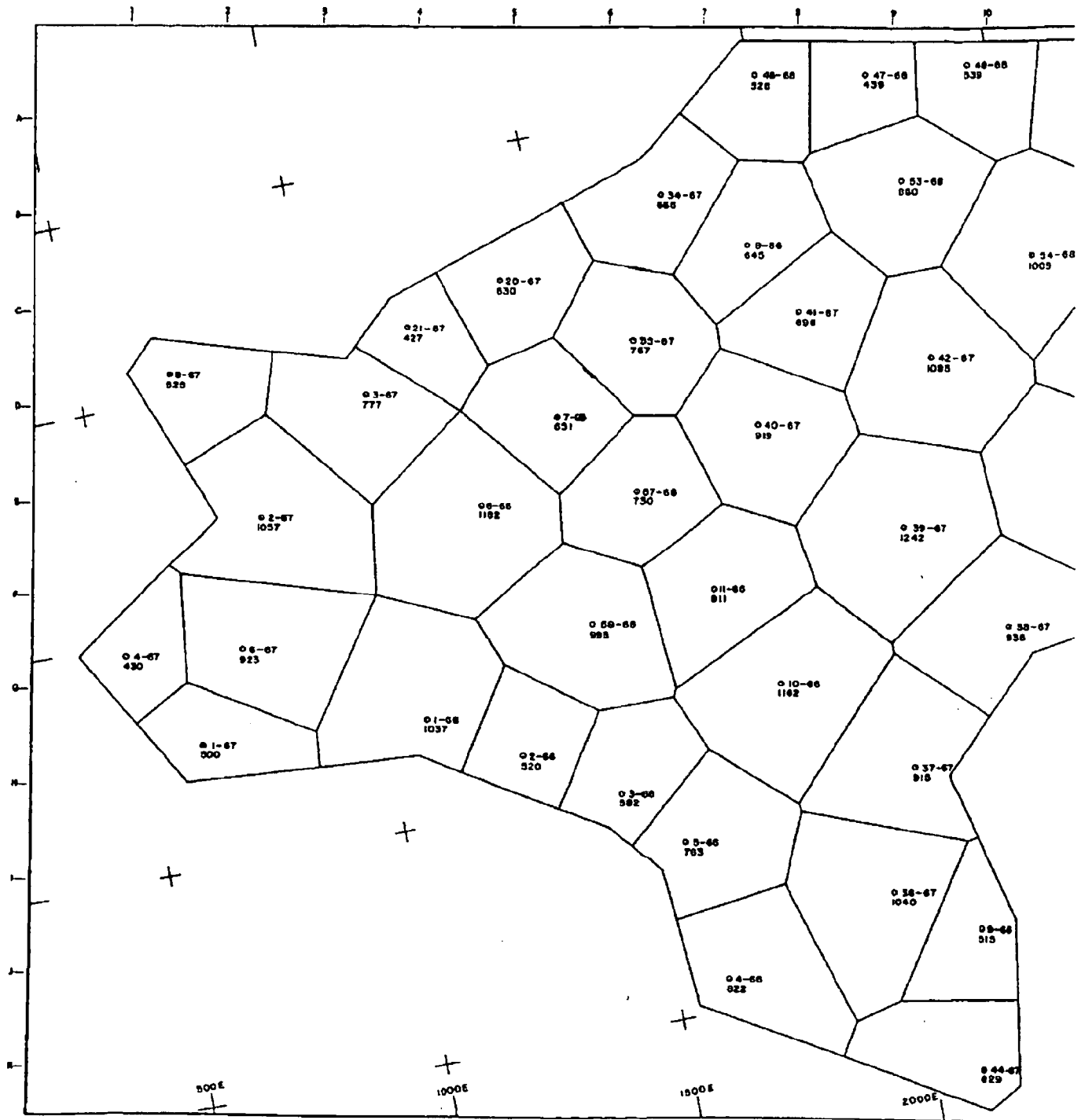


Plate 5 - Polygonal Areas of Influence





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Discussion - continued

to determine the volume of a deposit. Usually, these methods assume a uniform grade throughout the entire deposit.

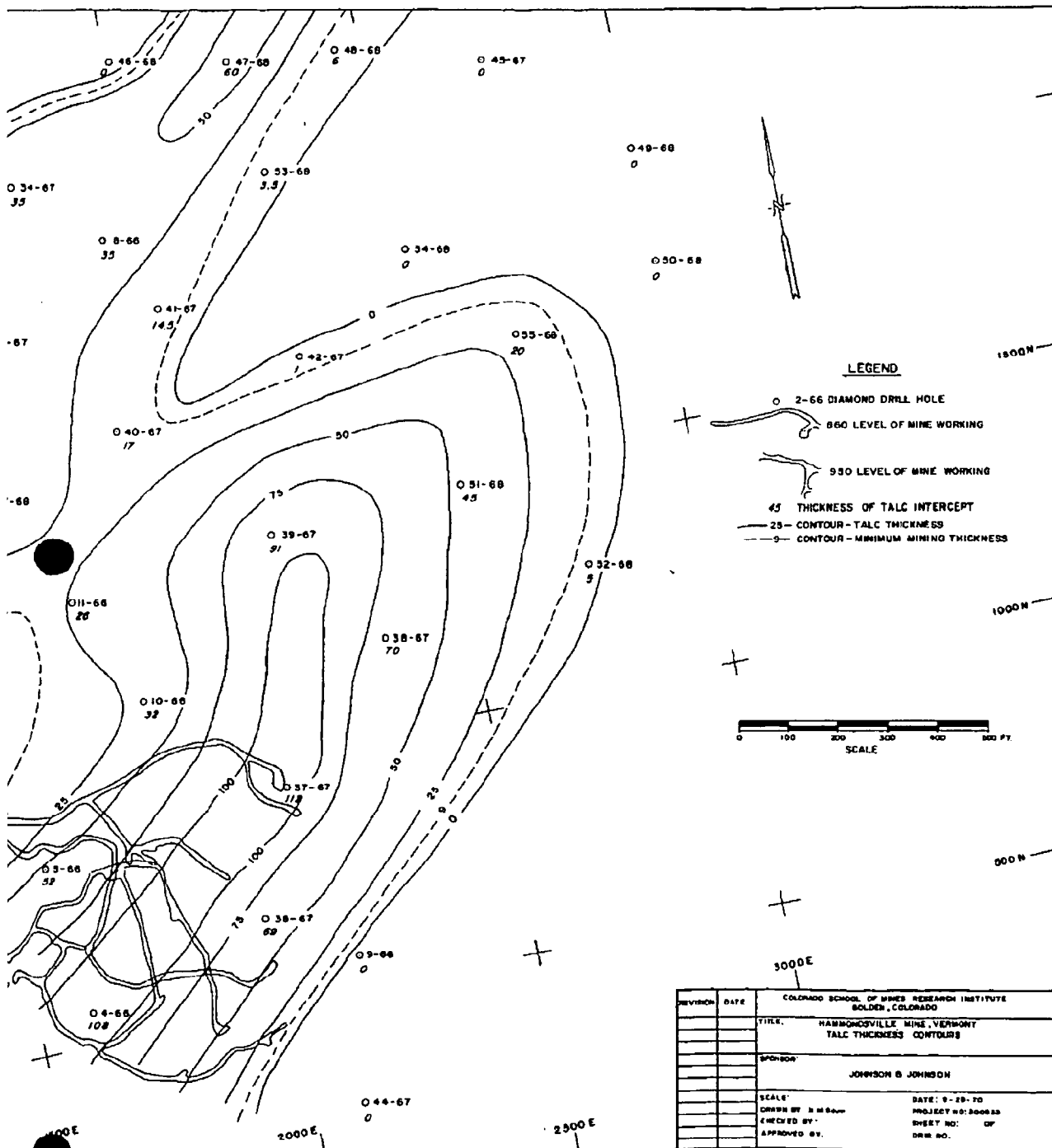
The method used in calculating ore reserves for this report combines two different techniques and is thought to be the most realistic method of calculating ore reserves for the Hammondsville Mine.

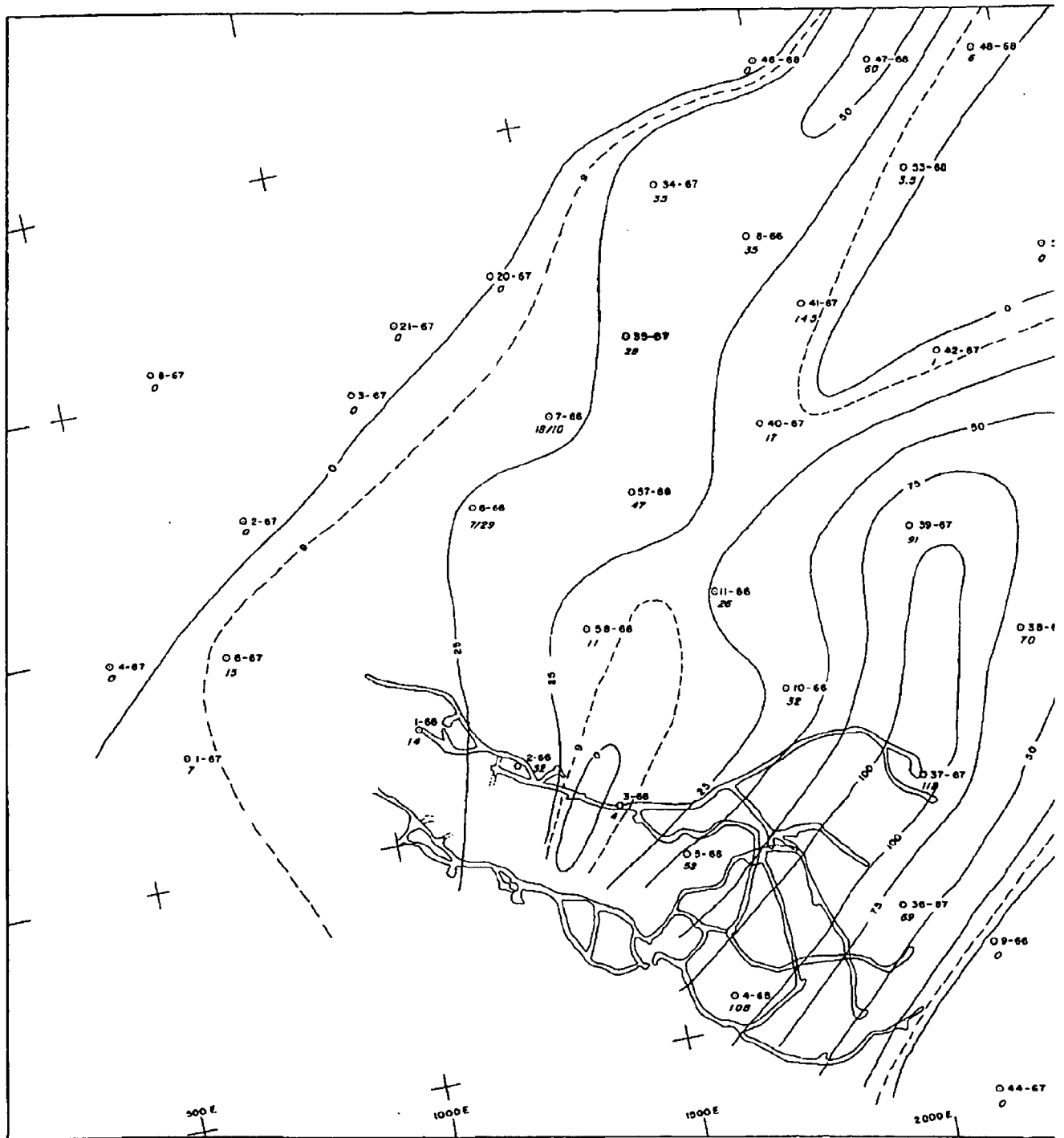
The method involves combining the isopach map of talc thicknesses (Plate 1 and in pocket) and the polygonal areas of influence of the various drill holes (Plate 5). The area for each polygon was combined with the thickness from the isopachs to obtain the volume; the ore grade within the appropriate polygons was assigned to the respective volumes. These values were then totaled to give the weighted ore reserve estimate.

The advantage of this technique is that the variation in grade is assigned to an appropriate volume based upon the polygonal area of influence of the drill holes and the more accurate volume is obtained from isopachs.

In preparing the isopach map no corrections were made for the dip of the ore body because it was generally shallow dip. Deviation of the drill holes seems almost a certainty. The majority of the core examined indicated that the vertical holes had deviated enough to intersect the schistosity of the ore and host rocks at a nearly perpendicular angle. This is frequently

Plate 1 - Talc Thickness Contours (isopach map)





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Discussion - continued

a problem when drilling in schistose or gneissic rocks.

An examination of the isopach map, Plate 1 seems to indicate that the minimum-mining-thickness contour (nine feet) on the southeast side of the map is displaced almost 100 feet to the east. This contour was drawn on the basis of drilling information and was modified slightly on the basis of information available from the mine workings in that area. There is presently not sufficient evidence to move this contour to the west. The difference in reserve tonnage if this contour were moved would probably be less than 100,000 tons.

Ore Quality

In order to determine the quality of the ore reserves within the Hammondsville Mine, it was desirable to carefully sample the available diamond-drill core. One hundred and seven samples were sawed from the core from 17 different drill holes. These were submitted for chemical, mineralogical, and petrographic analysis. A selected few of these samples were submitted for more exhaustive analysis after flotation testing.

In addition, almost forty samples of core material were submitted for thin-section analysis to determine various information about the host rock, the ore, and the origin of the deposit. The results of these analyses have been discussed under

Discussion - continued

Thin Section and X-Ray Analysis in the section on Geology.

The only chemical test performed on the core samples was a determination of the acid solubility. This was done by the standard Johnson and Johnson procedure in the laboratory at Golden. The results are shown in Tables 2 through 18.

X-Ray diffraction analyses were performed on ground samples of rock. All peak heights reported in the tables were measured in centimeters above background directly from x-ray diffractograms. The principal peaks of the various minerals are reported so that, in the case of talc, chlorite, and mica, the relative height above background (intensity) of these minerals are roughly comparable to relative abundance of the three minerals. It should be pointed out that these numbers do not represent percentages of the various minerals.

The percentages of the various minerals, as determined optically, are reported in Tables 2 through 18 and represent the microscopic estimate of the amount of the mineral present on slides of the insoluble residues from chemical testing. The purpose for doing microscopic analyses on the insoluble residues was to eliminate the problem of identifying the abundant carbonates (other than by x-ray means). The residues were almost entirely silicates, mostly talc and chlorite. The differentiation between these two, as stated earlier, is very difficult

TABLE 2
X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 1-67-H

<u>Interval (ft)</u>	<u>39.0- 41.0</u>	<u>47.0- 54.0</u>	<u>57.3- 59.3</u>
<u>X-Ray Diffraction Peak Heights</u>			
Talc	23.8	19.8	11.2
Tremolite- Actinolite	--	--	2.5
Chlorite	1.2	0.8	0.8
Quartz	--	--	0.7
Calcite	--	--	--
Dolomite	3.4	4.6	0.4
Magnesite	4.5	4.5	0.2
Mica	--	--	--
<u>Microscopic Examination of Insoluble Portion</u>			
% Platy Talc	42	56	36
% Foliated Talc	35	30	50
% Fibrous Talc	20	10	10
% F.G.A. Talc	<1	<1	<1
% Carbonate	3	3	3
% Dark Opaque	<1	<1	1
% Chlorite	--	--	--
% Quartz	--	--	--
% Tremolite- Actinolite	--	--	--
% Mica	--	--	--
% Acid Soluble	34.3	35.4	6.7

TABLE 3

X-RAY DIFFRACTION AND MICROSCOPIC DATADiamond Drill Hole 6-67-H

<u>Interval (ft)</u>	<u>139.0- 141.7</u>	<u>149.0- 153.0</u>	<u>159.0- 164.0</u>	<u>164.0- 169.0</u>	<u>169.0- 174.0</u>	<u>175.0- 177.0</u>
<u>X-Ray Diffraction Peak Heights</u>						
Talc	6.8	10.8	13.4	15.7	17.1	7.6
Tremolite- Actinolite	--	--	--	--	--	--
Chlorite	2.1	1.2	0.6	0.6	1.4	0.7
Quartz	0.4	--	--	--	2.5	2.1
Calcite	--	--	--	--	--	--
Dolomite	5.6	1.8	3.2	1.9	1.5	2.0
Magnesite	1.3	8.1	6.2	3.0	0.4	--
Mica	--	--	--	--	2.9	0.7
<u>Microscopic Examination of Insoluble Portion</u>						
% Platy Talc	36	40	34	36	47	44
% Foliated Talc	50	50	40	50	40	40
% Fibrous Talc	10	5	20	10	5	5
% F.G.A. Talc	<1	<1	<1	<1	<1	<1
% Carbonate	3	5	5	3	2	5
% Dark Opaque	1	<1	1	1	1	1
% Chlorite	--	--	--	--	--	--
% Quartz	--	--	--	--	--	--
% Tremolite- Actinolite	--	--	--	--	--	--
% Mica	--	--	--	--	10	5
% Acid Soluble	28.4	38.5	41.7	36.1	18.2	18.6

J&J-0005185

TABLE 4
X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 21-67-H

Interval (ft) 765.1-
 770.4

X-Ray Diffraction
Peak Heights

Talc	0.3
Tremolite- Actinolite	--
Chlorite	3.0
Quartz	4.8
Calcite	--
Dolomite	0.6
Magnesite	--
Mica	6.5

Microscopic
Examination
of Insoluble
Portion

% Platy Talc	2
% Foliated Talc	<1
% Fibrous Talc	<1
% F.G.A. Talc	<1
% Carbonate	5
% Dark Opaque	3
% Chlorite	--
% Quartz	10
% Tremolite- Actinolite	--
% Mica	80
% Acid Soluble	9.3

TABLE 5

X-RAY DIFFRACTION AND MICROSCOPIC DATADiamond Drill Hole 34-67-H

<u>Interval (ft)</u>	<u>507.0- 512.0</u>	<u>512.0- 517.0</u>	<u>517.0- 522.0</u>	<u>522.0- 527.0</u>	<u>527.0- 532.0</u>	<u>532.0- 537.0</u>	<u>537.0- 542.0</u>
<u>X-Ray Diffraction Peak Heights</u>							
Talc	21.7	12.5	8.5	9.5	12.2	12.2	14.5
Tremolite- Actinolite	--	--	--	--	--	--	--
Chlorite	1.9	1.5	0.9	0.5	0.5	0.9	1.5
Quartz	--	--	--	--	--	--	--
Calcite	--	--	--	--	--	--	--
Dolomite	1.7	3.3	2.5	7.2	2.3	4.6	6.1
Magnesite	3.2	4.4	2.7	2.1	1.3	1.5	1.2
Mica	--	--	--	--	--	--	--
<u>Microscopic Examination of Insoluble Portion</u>							
% Platy Talc	39	41	50	50	20	40	35
% Foliated Talc	50	45	37	33	65	45	44
% Fibrous Talc	5	10	10	15	10	10	10
% F.G.A. Talc	2	<1	<1	<1	<1	<1	<1
% Carbonate	3	3	3	2	5	5	5
% Dark Opaque	1	1	<1	<1	<1	<1	1
% Chlorite	--	--	--	--	--	--	5
% Quartz	--	--	--	--	--	--	--
% Tremolite- Actinolite	--	--	--	--	--	--	--
% Mica	--	--	--	--	--	--	--
% Acid Soluble	31.7	36.4	44.2	46.6	42.5	47.2	34.0

J&J-0005187

TABLE 6

X-RAY DIFFRACTION AND MICROSCOPIC DATADiamond Drill Hole 35-67-H

<u>Interval (ft)</u>	<u>382.5- 387.5</u>	<u>387.5- 392.5</u>	<u>392.5- 397.5</u>	<u>397.5- 402.5</u>	<u>402.5- 404.5</u>	<u>404.5- 410.5</u>
<u>X-Ray Diffraction Peak Heights</u>						
Talc	14.1	12.3	8.0	9.9	8.4	10.2
Tremolite Actinolite	--	--	--	--	--	--
Chlorite	1.2	2.9	3.6	4.2	1.5	3.1
Quartz	--	--	--	--	--	--
Calcite	--	--	--	--	--	--
Dolomite	1.5	1.7	1.5	1.2	1.7	2.1
Magnesite	4.6	3.4	6.1	--	0.2	2.5
Mica	--	--	--	--	--	--
<u>Microscopic Examination of Insoluble Portion</u>						
% Platy Talc	30	35	30	58	60	50
% Foliated Talc	52	39	47	30	30	36
% Fibrous Talc	10	15	20	10	10	10
% F.G.A. Talc	<1	<1	<1	<1	<1	<1
% Carbonate	7	10	3	<1	1	3
% Dark Opaque	1	1	<1	<1	<1	1
% Chlorite	--	--	--	2	--	--
% Quartz	--	--	--	--	--	--
% Tremolite- Actinolite	--	--	--	--	--	--
% Mica	--	--	--	--	--	--
% Acid Soluble	35.0	30.6	24.9	23.2	30.8	26.3

J&J-0005188

TABLE 7

RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 36-67-H

	430.5- 435.5	435.5- 440.0	440.0- 444.5	444.5- 451.2	451.2- 457.8	457.8- 465.8
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11.7	12.0	4.7	4.0	11.2	8.3
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0.7	1.3	0.8	1.0	4.0	0.7
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3.5	2.3	0.9	0.6	0.5	0.2
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3.2	2.8	2.3	0.9	0.9	3.5
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30	40	40	36	79	50
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60	50	55	60	15	40
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10	7	2	3	5	8
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<1	<1	<1	<1	<1	<1
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<1	3	3	1	1	1
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<1	<1	<1	<1	<1	<1
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43.9	29.4	42.4	23.2	14.2	29.0
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TABLE 7

X-RAY DIFFRACTION AND MICROSCOPIC DDiamond Drill Hole 36-67-H

<u>Interval (ft)</u>	<u>399.2- 405.5</u>	<u>405.5- 421.0</u>	<u>421.0- 425.5</u>	<u>425.5- 430.5</u>	<u>430.5- 435.5</u>	<u>435.5- 440.0</u>	<u>440.0- 444.5</u>	<u>444.5 451.2</u>
<u>X-Ray Diffraction Peak Heights</u>								
Talc	18.2	12.6	14.7	12.7	11.7	12.0	4.7	4.0
Tremolite- Actinolite	--	--	--	--	--	--	--	--
Chlorite	1.5	1.0	0.7	0.8	0.7	1.3	0.8	1.0
Quartz	--	--	--	--	--	--	--	--
Calcite	--	--	--	--	--	--	--	--
Dolomite	3.8	0.5	2.6	2.5	3.5	2.3	0.9	0.6
Magnesite	1.6	4.2	5.1	9.2	3.2	2.8	2.3	0.9
Mica	--	--	--	--	--	--	--	--
<u>Microscopic Examination of Insoluble Portion</u>								
% Platy Talc	10	5	20	30	30	40	40	36
% Foliated Talc	82	86	70	60	60	50	55	60
% Fibrous Talc	5	5	8	8	10	7	2	3
% F.G.A. Talc	<1	<1	<1	<1	<1	<1	<1	<1
% Carbonate	1	1	1	1	<1	3	3	1
% Dark Opaque	2	3	1	1	<1	<1	<1	<1
% Chlorite	--	--	--	--	--	--	--	--
% Quartz	--	--	--	--	--	--	--	--
% Tremolite- Actinolite	--	--	--	--	--	--	--	--
% Mica	--	--	--	--	--	--	--	--
% Acid Soluble	24.4	30.2	36.6	32.3	43.9	29.4	42.4	23.2

J&J-0005190

TABLE 8
X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 37-67-H															
Interval (ft)	362.6- 367.5	367.5- 377.0	377.0- 386.0	386.0- 389.0	389.0- 394.0	394.0- 399.0	399.0- 404.0	404.0- 409.0	409.0- 414.0	414.0- 419.0	419.0- 424.0	424.0- 429.0	429.0- 434.0	434.0- 437.0	437.0- 439
X-Ray Diffraction Peak Heights															
Talc	25.0	20.0	6.9	16.7	16.2	4.5	6.8	20.6	17.1	25.7	8.3	14.5	5.0	5.6	5
Tremolite- Actinolite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorite	1.5	0.8	1.8	1.2	4.0	0.9	0.7	1.3	1.4	0.9	0.5	0.8	0.9	0.5	2
Quartz	--	--	3.3	--	--	--	--	--	--	--	--	--	--	--	--
Calcite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dolomite	1.6	2.3	6.0	4.9	3.8	2.5	4.0	2.2	1.8	3.1	5.7	4.0	0.7	1.2	5.
Magnetite	3.3	2.4	0.2	5.9	1.7	1.5	2.0	6.6	5.8	7.4	4.2	2.0	1.7	6.6	1.
Mica	0.3	--	3.4	--	0.2	--	--	0.2	0.2	0.3	--	--	--	--	--
Microscopic Examination of Insoluble Portion															
% Platy Talc	39	49	34	32	50	40	47	58	53	47	35	35	57	59	45
% Foliated Talc	50	45	40	50	40	37	30	30	30	40	40	50	30	30	39
% Fibrous Talc	10	5	5	15	10	20	20	10	15	10	20	10	10	10	10
% F.C.A. Talc	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
% Carbonate	1	1	1	1	<1	2	3	2	2	3	5	5	2	1	5
% Dark Opaque	<1	<1	<1	1	<1	1	<1	<1	<1	<1	<1	<1	1	<1	1
% Chlorite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
% Quartz	--	--	10	--	--	--	--	--	--	--	--	--	--	--	--
% Tremolite- Actinolite	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
% Mica	--	--	10	1	--	--	--	--	--	--	--	--	--	--	--
% Acid Soluble	23.1	30.7	34.1	36.6	28.9	33.5	43.6	39.0	36.2	39.8	42.0	40.5	33.9	37.8	42.5

414.0- 419.0	419.0- 424.0	424.0- 429.0	429.0- 434.0	434.0- 437.0	439.0- 444.0	444.0- 449.0	449.0- 454.0	476.0- 481.0	481.0- 486.0	486.0- 491.0	491.0- 497.0	497.0- 503.0	503.0- 513.0	513.0- 518.0	518.0- 523.0	523.0- 528.0
25.7	8.3	14.5	8.0	5.6	8.8	8.8	7.9	3.6	6.0	12.2	14.4	11.4	18.3	14.1	15.4	21.9
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
0.9	0.5	0.8	0.9	0.5	2.2	2.1	2.3	6.5	4.8	7.7	1.9	2.2	2.9	3.4	1.5	3.3
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	0.2	--	--	--	--
3.1	5.7	4.0	0.7	1.2	5.8	5.2	3.8	0.8	1.8	0.4	1.8	4.1	3.6	1.9	0.5	0.7
7.4	4.2	2.0	1.7	6.6	1.6	2.7	3.6	0.9	2.1	4.7	5.0	10.0	7.0	4.3	8.2	7.4
0.3	--	--	--	--	--	--	--	--	--	--	--	--	0.2	--	0.1	0.2
47	35	35	57	59	45	44	52	55	55	49	40	45	60	40	35	44
40	40	50	30	30	39	30	30	30	30	30	48	40	30	45	45	44
10	20	10	10	10	10	20	10	10	5	15	10	14	10	15	20	10
<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
3	5	5	2	1	5	5	7	5	10	5	2	1	<1	<1	3	2
<1	<1	<1	1	<1	1	1	1	<1	1	1	<1	<1	<1	<1	1	<1
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39.8	42.0	40.5	33.9	37.8	42.7	44.9	31.1	22.0	27.7	13.5	36.9	46.5	39.6	34.3	30.6	25.5

TABLE 9

ACTION AND MICROSCOPIC DATA

nd Drill Hole 38-67-H

<u>505.5- 508.0</u>	<u>508.0- 513.0</u>	<u>513.0- 518.0</u>	<u>518.0- 523.0</u>	<u>523.0- 528.0</u>	<u>528.0- 533.0</u>	<u>533.0- 538.0</u>	<u>538.0- 543.0</u>	<u>543.0- 548.0</u>	<u>548.0- 553.0</u>
9.5	9.1	10.9	8.9	13.6	7.3	12.1	18.6	18.4	18.9
--	--	--	--	--	--	--	--	--	0.4
2.0	2.1	2.7	2.0	2.3	1.6	2.2	0.8	0.4	0.8
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	0.2	--	--
0.7	0.4	0.3	4.2	8.0	2.3	3.4	12.4	13.0	4.7
6.1	6.7	2.2	4.3	4.5	0.6	--	0.5	4.6	1.3
--	--	--	--	0.1	--	--	0.2	0.1	0.3
30	20	10	20	30	43	63	54	59	62
58	58	72	55	50	55	30	35	30	30
10	10	10	20	20	10	5	10	10	5
<1	10	5	3	<1	<1	<1	<1	<1	<1
1	1	2	1	2	2	1	<1	<1	3
<1	1	1	1	1	1	1	<1	1	<1
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	1	--	--
--	--	--	--	--	--	--	--	--	--
31.2	32.1	23.2	36.5	40.9	36.0	50.7	50.8	51.1	40.9

TABLE 9
X-RAY DIFFRACTION AND MICROSCOPIC DATA

<u>Diamond Drill Hole 38-67-H</u>									
<u>Interval (ft)</u>	<u>479.0- 485.0</u>	<u>485.0- 491.0</u>	<u>491.0- 494.0</u>	<u>497.5- 500.5</u>	<u>500.5- 505.5</u>	<u>505.5- 508.0</u>	<u>508.0- 513.0</u>	<u>513.0- 518.0</u>	<u>518.0- 523.0</u>
<u>X-Ray Diffraction Peak Heights</u>									
Talc	8.1	14.9	10.1	6.0	7.2	9.5	9.1	10.9	8.9
Tremolite- Actinolite	--	--	--	--	--	--	--	--	--
Chlorite	0.5	1.5	1.1	0.4	0.7	2.0	2.1	2.7	2.0
Quartz	--	--	--	--	--	--	--	--	--
Calcite	--	--	--	--	--	--	--	--	--
Dolomite	4.3	2.2	1.0	0.6	--	0.7	0.4	0.3	4.2
Magnesite	1.2	5.0	2.7	7.4	4.2	6.1	6.7	2.2	4.3
Mica	--	--	--	--	--	--	--	--	--
<u>Microscopic Examination of Insoluble Portion</u>									
% Platy Talc	40	20	40	36	18	30	20	10	20
% Foliated Talc	50	66	54	50	70	58	58	72	55
% Fibrous Talc	8	10	5	10	10	10	10	10	20
% F.G.A. Talc	<1	2	<1	<1	<1	<1	10	5	3
% Carbonate	1	1	<1	3	1	1	1	2	1
% Dark Opaque	1	1	1	1	1	<1	1	1	1
% Chlorite	--	--	--	--	--	--	--	--	--
% Quartz	--	--	--	--	--	--	--	--	--
% Tremolite- Actinolite	--	--	--	--	--	--	--	--	--
% Mica	--	--	--	--	--	--	--	--	--
% Acid Soluble	31.3	30.3	27.7	30.4	26.9	31.2	32.1	23.2	36.5

J&J-0005194

TABLE 10

REACTION AND MICROSCOPIC DATA

and Drill Hole 39-67-H

<u>489.0- 495.0</u>	<u>495.0- 500.0</u>	<u>500.0- 505.0</u>	<u>505.0- 510.0</u>	<u>510.0- 515.0</u>	<u>515.0- 520.0</u>	<u>520.0- 525.0</u>	<u>525.0- 530.0</u>	<u>530.0- 535.0</u>	<u>535.0- 540.0</u>	<u>540.0- 545.0</u>
5.5	10.3	7.5	8.5	6.9	15.1	7.7	11.0	4.8	12.6	7.3
--	--	--	--	--	--	--	--	--	--	--
0.8	0.8	0.7	0.7	0.7	0.8	0.5	0.7	0.8	1.3	1.3
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
0.6	1.5	1.7	2.7	2.3	1.3	2.1	3.3	1.4	6.5	4.5
6.6	1.4	7.4	3.4	3.2	5.3	3.0	4.8	1.4	8.5	7.3
--	--	--	--	--	--	--	--	--	--	--
34	38	57	50	20	30	45	44	49	44	40
50	50	30	38	63	64	45	50	35	50	47
10	10	10	10	12	5	10	5	10	5	10
<1	1	<1	2	3	1	<1	<1	<1	<1	<1
5	1	3	<1	1	<1	<1	1	5	1	2
1	<1	<1	<1	1	1	<1	<1	<1	<1	1
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
33.4	41.1	36.0	41.7	38.8	32.2	42.2	38.3	30.6	36.8	45.8

TABLE 10

X-RAY DIFFRACTION AND MICROSCOPIC DATADiamond Drill Hole 39-67-H

<u>Interval (ft)</u>	<u>454.0- 459.0</u>	<u>459.0- 469.0</u>	<u>469.0- 479.0</u>	<u>479.0- 484.0</u>	<u>484.0- 489.0</u>	<u>489.0- 495.0</u>	<u>495.0- 500.0</u>	<u>500.0- 505.0</u>	<u>505.0- 510.0</u>
<u>X-Ray Diffraction Peak Heights</u>									
Talc	2.5	9.5	4.6	6.3	8.0	5.5	10.3	7.5	8.5
Tremolite- Actinolite	--	--	--	--	--	--	--	--	--
Chlorite	1.5	0.7	0.8	0.8	1.0	0.8	0.8	0.7	0.7
Quartz	--	--	--	--	--	--	--	--	--
Calcite	--	--	--	--	--	--	--	--	--
Dolomite	2.0	7.4	1.7	2.1	2.5	0.6	1.5	1.7	2.7
Magnesite	1.2	3.5	4.0	7.0	4.0	6.6	1.4	7.4	3.4
Mica	1.7	--	--	--	--	--	--	--	--
<u>Microscopic Examination of Insoluble Portion</u>									
% Platy Talc	30	10	50	50	60	34	38	57	50
% Foliated Talc	45	80	40	35	33	50	50	30	38
% Fibrous Talc	10	10	5	10	5	10	10	10	10
% F.G.A. Talc	<1	<1	<1	<1	<1	<1	1	<1	2
% Carbonate	1	<1	5	5	2	5	1	3	<1
% Dark Opaque	2	<1	<1	<1	<1	1	<1	<1	<1
% Chlorite	--	--	--	--	--	--	--	--	--
% Quartz	2	--	--	--	--	--	--	--	--
% Tremolite- Actinolite	--	--	--	--	--	--	--	--	--
% Mica	10	--	--	--	--	--	--	--	--
% Acid Soluble	35.0	49.8	45.7	29.7	37.2	33.4	41.1	36.0	41.7

J&J-0005196

TABLE 11

X-RAY DIFFRACTION AND MICROSCOPIC DATDiamond Drill Hole 40-67-H

<u>Interval (ft)</u>	<u>488.0- 496.0-</u>	<u>496.0- 505.0</u>
<u>X-Ray Diffraction Peak Heights</u>		
Talc	16.8	10.5
Tremolite- Actinolite	--	--
Chlorite	2.2	3.8
Quartz	--	0.9
Calcite	--	--
Dolomite	5.4	2.1
Magnetite	4.4	4.4
Mica	--	0.7
<u>Microscopic Examination of Insoluble Portion</u>		
% Platy Talc	45	40
% Foliated Talc	40	49
% Fibrous Talc	5	10
% F.G.A. Talc	<1	<1
% Carbonate	<1	1
% Dark Opaque	<1	<1
% Chlorite	--	--
% Quartz	--	--
% Tremolite- Actinolite	--	--
% Mica	--	--
% Acid Soluble	33.8	33.5

TABLE 12
X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 41-67-H

<u>Interval (ft)</u>	<u>594.0 599.0</u>	<u>599.0 604.0</u>	<u>604.0 608.5</u>
<u>X-Ray Diffraction Peak Heights</u>			
Talc	13.1	18.2	18.7
Tremolite- Actinolite	--	--	--
Chlorite	6.2	3.0	2.3
Quartz	--	--	0.1
Calcite	--	--	--
Dolomite	1.9	6.5	1.2
Magnesite	4.2	3.8	2.5
Mica	0.2	0.2	0.4
<u>Microscopic Examination of Insoluble Portion</u>			
% Platy Talc	50	60	49
% Foliated Talc	44	34	36
% Fibrous Talc	5	5	10
% F.G.A. Talc	<1	<1	<1
% Carbonate	1	1	3
% Dark Opaque	<1	<1	1
% Chlorite	--	--	--
% Quartz	--	--	1
% Tremolite- Actinolite	--	--	--
% Mica	--	--	--
% Acid Soluble	25.3	33.7	29.0

J&J-0005198

TABLE 13

X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 44-67-H

<u>Interval (ft)</u>	<u>299.9- 304.0</u>	<u>304.0- 309.0</u>
<u>X-Ray Diffraction Peak Heights</u>		
Talc	0.2	0.6
Tremolite- Actinolite	0.5	0.4
Chlorite	1.3	2.3
Quartz	3.9	9.9
Calcite	--	--
Dolomite	--	--
Magnesite	--	--
Mica	6.0	11.2
<u>Microscopic Examination of Insoluble Portion</u>		
% Platy Talc	24	20
% Foliated Talc	5	10
% Fibrous Talc	2	2
% F.G.A. Talc	<1	<1
% Carbonate	1	3
% Dark Opaque	3	2
% Chlorite	10	10
% Quartz	5	3
% Tremolite- Actinolite	--	--
% Mica	50	50
% Acid Soluble	8.16	7.91

TABLE 14

X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 45-67-H

<u>Interval (ft)</u>	<u>903.0-</u> <u>905.0</u>
----------------------	-------------------------------

X-Ray Diffraction
Peak Heights

Talc	2.4
Tremolite- Actinolite	0.4
Chlorite	0.7
Quartz	2.4
Calcite	--
Dolomite	2.7
Magnesite	--
Mica	1.5

Microscopic
Examination
of Insoluble
Portion

% Platy Talc	35
% Foliated Talc	26
% Fibrous Talc	5
% F.G.A. Talc	<1
% Carbonate	<1
% Dark Opaque	1
% Chlorite	--
% Quartz	3
% Tremolite- Actinolite	--
% Mica	30
% Acid Soluble	21.3

TABLE 15

X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 46-68-H

<u>Interval (ft)</u>	<u>580.0- 586.0</u>
<u>X-Ray Diffraction Peak Heights</u>	
Talc	0.7
Tremolite- Actinolite	--
Chlorite	1.0
Quartz	6.7
Calcite	--
Dolomite	0.3
Magnesite	--
Mica	7.4
<u>Microscopic Examination of Insoluble Portion</u>	
% Platy Talc	15
% Foliated Talc	7
% Fibrous Talc	3
% F.G.A. Talc	<1
% Carbonate	<1
% Dark Opaque	<1
% Chlorite	--
% Quartz	10
% Tremolite- Actinolite	--
% Mica	65
% Acid Soluble	13.1

J&J-0005201

TABLE 16

X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 49-68-H

<u>Interval (ft)</u>	<u>973.0- 976.5</u>	<u>980.0- 986.5</u>
<u>X-Ray Diffraction Peak Heights</u>		
Talc	2.2	0.6
Tremolite- Actinolite	0.6	--
Chlorite	1.6	1.1
Quartz	5.0	6.7
Calcite	0.7	--
Dolomite	--	0.2
Magnesite	--	--
Mica	3.5	8.4
<u>Microscopic Examination of Insoluble Portion</u>		
% Platy Talc	15	5
% Foliated Galc	12	2
% Fibrous Talc	1	1
% F.G.A. Talc	<1	<1
% Carbonate	2	1
% Dark Opaque	<1	1
% Chlorite	--	--
% Quartz	10	10
% Tremolite- Actinolite	--	--
% Mica	60	80
% Acid Soluble	10.9	12.6

TABLE 17

X-RAY DIFFRACTION AND MICROSCOPIC DATA

Diamond Drill Hole 50-68-H

<u>Interval (ft)</u>	<u>889.0- 893.0</u>
<u>X-Ray Diffraction Peak Heights</u>	
Talc	0.5
Tremolite- Actinolite	--
Chlorite	0.8
Quartz	1.9
Calcite	--
Dolomite	0.5
Magnesite	--
Mica	2.0
<u>Microscopic Examination of Insoluble Portion</u>	
% Platy Talc	16
% Foliated Talc	10
% Fibrous Talc	3
% F.G.A. Talc	<1
% Carbonate	<1
% Dark Opaque	1
% Chlorite	10
% Quartz	10
% Tremolite- Actinolite	--
% Mica	50
% Acid Soluble	16.5

TABLE 18

X-RAY DIFFRACTION AND MICROSCOPIC DATADiamond Drill Hole 55-68-H

<u>Interval (ft)</u>	<u>692.0- 697.0</u>	<u>697.0- 704.0</u>	<u>704.0- 706.0</u>	<u>706.0- 712.0</u>
<u>X-Ray Diffraction Peak Heights</u>				
Talc	6.7	15.1	15.0	14.1
Tremolite- Actinolite	--	--	--	--
Chlorite	0.9	3.6	2.1	1.2
Quartz	0.2	--	--	--
Calcite	--	--	--	--
Dolomite	1.4	2.7	1.8	1.2
Magnesite	0.7	4.6	3.5	2.5
Mica	--	0.2	0.2	--
<u>Microscopic Examination of Insoluble Portion</u>				
% Platy Talc	45	50	50	40
% Foliated Talc	43	42	32	39
% Fibrous Talc	10	5	10	10
% F.G.A. Talc	<1	<1	<1	<1
% Carbonate	2	2	1	5
% Dark Opaque	<1	1	<1	1
% Chlorite	--	--	--	--
% Quartz	--	--	1	--
% Tremolite- Actinolite	--	--	--	--
% Mica	--	--	--	5
% Acid Soluble	41.5	30.5	34.8	24.2

Discussion - continued

and fine grains are impossible to differentiate optically.

To obtain percentages of the total sample for the various minerals identified optically, it is necessary to back-calculate from the percent of the rock which was soluble. This calculation was performed only for platy talc in this study as it is the only truly important constituent from the standpoint of ore reserves and quality.

The following table (Table 19) shows the results of the chemical, x-ray, and petrographic analyses.

Discussion - continued

Flotation Testing

Seven samples were chosen at random from the available drill-core samples for flotation testing. The results of color testing on the cleaner concentrate from these samples (Table 19) indicated that the color quality may deteriorate down-dip in the ore body and were reported by letter to Mr. William Ashton on 21 September 1970. At that time five more samples were selected from diamond-drill holes No. 38-67 and No. 39-67 to check this possibility in an area in which mining will soon commence.

It can be seen that the color values obtained from the seven samples from these two holes are below the standard value of 85.5 which has been set for the ore from the Hammondsville Mine.

Four samples were selected from the verde antique or so-called "serpentine" core of the ore body. These samples were from Diamond-Drill Hole 37-67. The purpose for taking these four samples was to ascertain if this material could be mined and blended with other ore from Vermont and still yield an acceptable product. This would increase the ore reserves if such a procedure were possible.

It appears (Table 19) that the verde antique core of the ore body could be, to some extent, mined and blended with the other ore with little deleterious effect on the color of the finished

TABLE 19

Of Selected Vermont Core Samples

37*	37-67*	37-67*	37-67	38-67	38-67	38-67	39-67	39-67	39-67	39-67	41-67
-	476- 481	486- 491	497- 505	500.5- 505.5	518- 523	533- 538	459- 469	489- 495	505- 510	530- 535	604- 608.5
5	22.3	39.6	14.0	12.4	14.8	8.3	17.2	22.0	13.2	18.4	20.0
3	2.1	2.6	0.7	0.6	0.7	0.6	0.6	0.7	0.3	0.6	0.9
7	--	--	0.15	0.2	0.5	1.1	0.3	0.3	--	0.4	0.2
3	--	tr	0.5	0.2	0.9	--	0.3	0.4	--	0.3	tr
3	--	0.4	--	0.3	0.2	tr	0.2	0.3	0.3	0.3	0.3
30	78.42	74.78	82.58	80.24	74.78	75.82	80.24	82.32	81.02	82.06	78.42
1	14.8	34.0	32.7	42.7	35.8	46.2	37.0	39.7	35.1	41.3	34.9
2	2	2	3	3	3	3	3	3	3	3	3
3-	0.01- 0.1	<0.1	0.05- 0.1	0.01- 0.05	0.01- 0.05	0.01- 0.05	0.05- 0.1	0.05- 0.1	0.05- 0.1	0.05- 0.1	>0.05

verde antique core of the ore body
the color difference is probably the
concentrate.

TABLE 19

Mineralogy and Color of Selected Vermont Core Samples

Drill Hole	35-67	36-67	37-67	37-67*	37-67*	37-67*	37-67*	37-67	38-6
Interval	397.5- 402.5	444.5- 451.2	404- 409	439.2- 444	449- 454	476- 481	486- 491	497- 505	500. 505.
Talc	19.3	22.7	9.6	22.7	17.5	22.3	39.6	14.0	12.4
Chlorite	0.8	0.7	0.2	2.0	2.0	2.1	2.6	0.7	0.6
Dolomite	0.3	tr	tr	0.7	0.7	--	--	0.15	0.2
Magnesite	--	--	tr	0.4	0.3	--	tr	0.5	0.2
Mica	0.2	0.3	--	--	0.3	--	0.4	--	0.3
Color	77.12	83.88	85.44	71.78	74.00	78.42	74.78	82.58	80.2.
% Cleaner concentrate	24.9	46.2	33.5	39.3	36.3	14.8	34.0	32.7	42.7
No. of cleaners	2	3	2	2	2	2	2	2	3
Principal size range in mm	>0.1	0.05- 0.1	0.05- 0.1	0.05- 0.1	0.05- 0.1	0.01- 0.1	<0.1	0.05- 0.1	0.01- 0.05

Note: Color (100% white) Vermont = 86.22
Italian talc = 91.16
Calif. Pilot
Plant Composite = 90.90

Samples marked with an asterisk (*) are taken from the verde antique core of the ore body and this rock is not normally mined. The reason for the color difference is probably the fairly high percentage of chlorite in the cleaner concentrate.

Discussion - continued

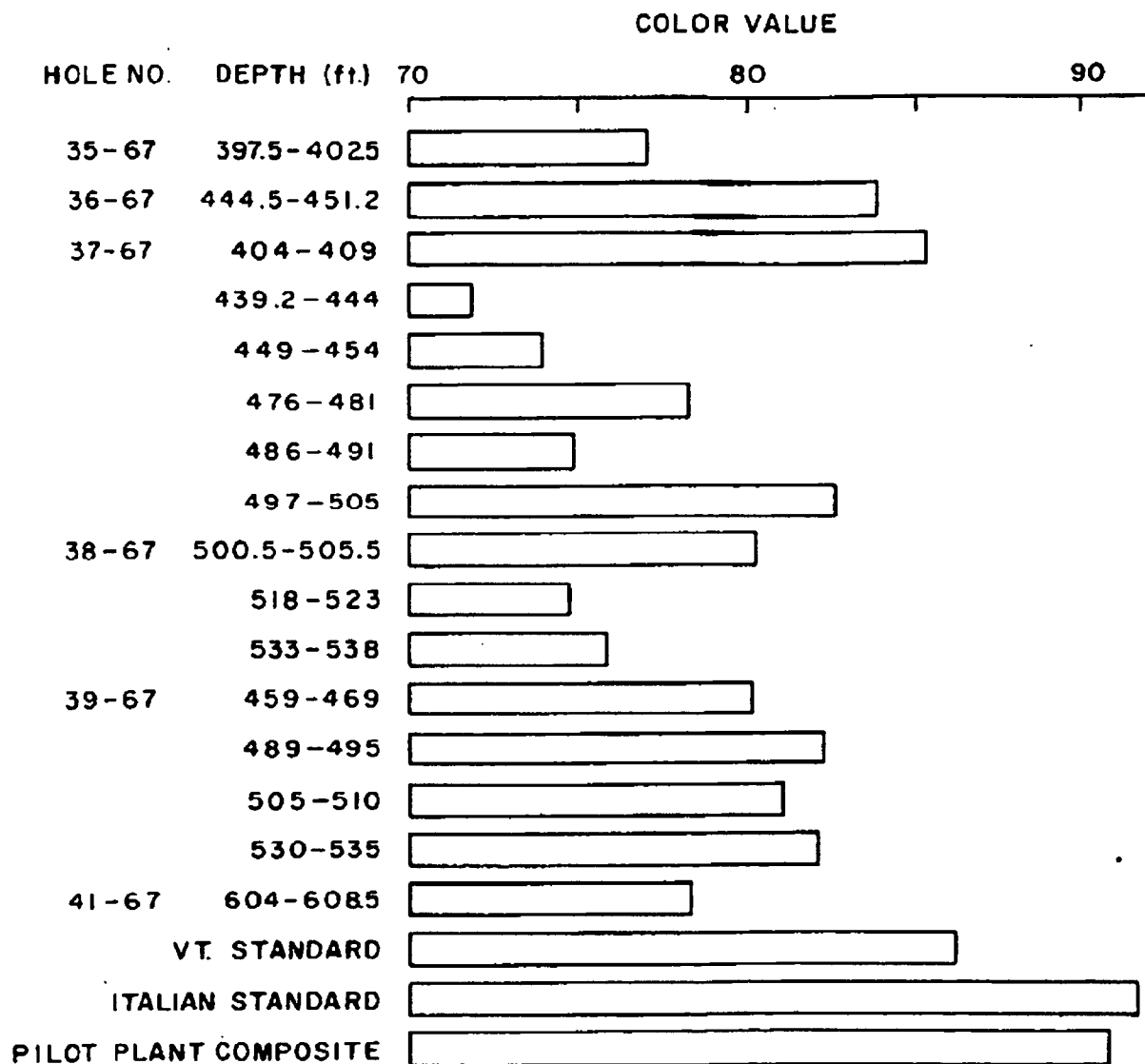
product. This would require that it be a minor part of the feed to the flotation circuits. There are obviously, however, some zones within the verde antique core which would be very low in whiteness and thus unusable as ore. These are thought to be near the margins of this material. More sampling and testing would be necessary to fully evaluate this possibility.

The color values obtained from the various samples are shown on the graph (Plate 6). The location of the holes and their position to the mine workings and ore body can be seen on the isopach Map of Talc Thicknesses (in pocket).

Drilling Recommendations

Of primary importance in any development drilling program is the acquisition of knowledge which will be useful for mining. Subordinate to this is the need to obtain information about the remainder of the ore body. There appears to be no immediate need for drilling out the entire deposit on closer centers unless the long-range plans of the company would be affected by having a more complete and accurate picture of the reserves and ore quality. At the present time, the ore reserves are classified as Indicated and it would take a great deal more drilling, probably three or four times the existing amount, to raise the classification of this reserve ore to the Measured category. It is felt that the

PLATE 6
COLORS OF SELECTED CLEANER CONCENTRATES
FROM HAMMONDSVILLE FLOTATION TESTING



Discussion - continued

existing drilling is adequate for a fair estimate of the ore reserves.

As has been pointed out in the section on Ore Quality, there is some concern that the color may deteriorate down-dip within the ore body. Drilling to obtain more information on this problem seems to be quite important. There is no doubt that the management at Windsor Minerals will be in a better position to lay out these holes than the Research Institute but our ideas are presented here for their evaluation. Eight diamond drill holes have been suggested on the 860 Level (see Proposed Diamond Drilling 30-Scale overlay map in pocket). These holes will not only allow evaluation of the quality of the talc below the 860 Level but will be of great assistance in mine planning for the next level down (770 Level ?). In order to evaluate the quality of the ore insofar as product color goes, these holes should be diamond drilled. The core in the ore zones should be sawed lengthwise and half should be used for the color assay. The use of a core splitter is not recommended because of the nature of the ore. It tends to exfoliate in a splitter and for this reason, a good split is impossible to obtain. It may be desirable to utilize the entire core for assay but this is often a mistake as more information is desired at a later date and duplicate holes might have to be drilled.

Discussion - continued

The location of these holes is shown on both the overlay plan (Proposed Diamond Drilling) and on Cross-Sections J, L, and N. These holes can either be drilled vertically or at 90 degrees to the schistosity (the dip of the ore). The proposed depths are shown on the overlay but each hole should be drilled at least 20 feet into the quartz-biotite schist to be certain that the foot-wall, and not a cinder, has been penetrated.

In addition to the above drilling, some surface holes seem called for. This would not only be for clarification of the color question but for mine planning on the next level. On the basis of the apparent physical shape of the ore body (see the Map of Talc Thicknesses, Plate 1) several areas can be seen in which drill holes would furnish a maximum of information. Four of these are listed below:

1. near the center of the triangle formed by holes 58-68, 6-66, and 57-68.
2. halfway between holes 58-68 and 10-66. This would be to evaluate the width of the apparent pinchout as well as ore quality. The hole should be placed somewhat to the east of the pinchout zone if possible.
3. approximately 200 feet west of hole 38-67. This should be about in the thickest part of the ore body and would be very important in evaluating ore quality.
4. approximately 225 feet N 40° E of Hole 10-66. This hole would evaluate not only color but the shape and size of the thickest portion of the ore body.

Discussion - continued

These holes, considered by us to be a bare minimum necessary for reasonable mine planning for the next five years or so, should give a maximum of information return for a rather limited amount of drilling. The philosophy behind the locating of these holes is readily applicable to the location of several more, if they seem necessary.

Any drill holes which are drilled to depths of more than 300 feet should be surveyed. It is not uncommon for drill holes in this type of rock to deviate from the vertical in less than 200 feet. The Tro-Pari method of surveying is probably the most practical; Eastman is probably better but more expensive.

It can be seen from Cross Section F that something of long-range interest takes place around Drill Hole 57-68. Not only does the thickness of the ore intercept increase but there is apparently some structural change in that area. The ore body may undergo a reversal of dip in this area or it may have been faulted somewhat. More drilling will be necessary in this area and to the north to answer these questions.

SELECTED REFERENCES

- Bowen, N. L., and Tuttle, O.F., 1949, The system $MgO-SiO_2-H_2O$, Geol. Soc. America, Bull. vol. 60, pp. 439-460.
- Chidester, A. H., Billings, M. P., and Cady, W. M., 1951, Talc investigations in Vermont, Preliminary report, U. S. Geological Survey, Circular 95.
- Eardley, A. J., 1962, Structural geology of North America, Harper & Row, New York.
- Gillson, J. L., 1927, Origin of Vermont talc deposits with a discussion on the formation of talc in general, Econ. Geology, vol. 22, no. 3, pp. 246-287.
- Melting, A. C., 1970, Safety and accident prevention examination and recommendation--Windsor Mine, CSM Research Institute, Project No. 300533, 12 August.
- Senate, U. S. Committee on Public Lands, 1947, Subcommittee Hearings, Investigation of National Resources, May 15-20, pp. 119-20.
- Suliin, David B., 1969, Report on beneficiation of Vermont talc concentrates, CSM Research Institute, Project No. 290527, September 18.
- Vermont Geological Survey, 1961, Centennial map of Vermont.

APPEND IX

A-1

J&J-0005215

EXHIBIT 1

MEGASCOPIC DESCRIPTION OF CORE SAMPLES

DDH 1-67 H

<u>Interval (ft)</u>	<u>Description</u>
39-41	Light green talcose marble. CO ₃ pink, about 50%. Overlain by 3 in. quartz vein, overlain by 30 ft of quartz-biotite schist. Recovery about 100%.
47-54	Light greenish gray to cream talcose marble. CO ₃ about 50%. Color of CO ₃ cream colored to flesh colored in areas. CO ₃ mostly in small blebs but some ½ in. knots are present. Over and underlain by "blackwall" chlorite-biotite schist plus quartz-biotite schist. Recovery 100%.
57.3-59.3	Dark green chloritic-talc schist. Overlain and underlain by "blackwall" and quartz-biotite schist. Recovery 100%.

Exhibit 1 - continued

DDH 38-67 H

<u>Interval (ft)</u>	<u>Description</u>
479-485	Mottled dark greenish gray and white talc-carbonate schist. CO ₃ about 25%. Some apple green talc. Overlain by a quartz-biotite-chlorite schist containing minor amounts of carbonate. Occasional fractures perpendicular to schistosity are filled with carbonate. Recovery 62%.
485-491	Mottled dark greenish gray and gray talc-carbonate schist. CO ₃ about 25%. Recovery 92%.
491-494	Dark grayish green mottled talc-carbonate schist. Some minor blebs and stringers of apple green talc. CO ₃ about 25%. Sharp contact on bottom of talcose zone with green "basalt" containing minor little veinlets of carbonate. Color grades in "basalt" from light green within 2 in. of contact to dark green. Sample taken for thin section. No visible alteration of talc at contact. Recovery 100%.
497.5-500.5	Mottled dark grayish green and gray talc-carbonate. At hanging wall contact there is no visible alteration of the talc rock. The "basalt" is lighter in color at the contact. "Basalt" also has some flow structure roughly parallel to "basalt"-talc contact plane. Possibly a mudstone. Recovery 100%.
500.5-505.5	Mottled dark grayish green talc-carbonate. CO ₃ in veins and blebs about 25 % of total rock. Recovery 100%.
505.5-508	Green and white mottled talc-carbonate. CO ₃ about 50%. Talc present as both light apple green and dark green varieties. Recovery 32%.
508-513	Mottled dark green and gray talc-carbonate. CO ₃ about 25%. Recovery 100%.

A-3

J&J-0005217

Exhibit 1 - continued

DDH 38-67 H (continued)

Interval (ft)	Description
518-518	Mottled dark green and gray talc-carbonate. CO ₃ about 25%. One vertical vein of CO ₃ 8 in. long bounded by apple green talc. Recovery 100%.
518-523	Mottled dark green and gray talc-carbonate. CO ₃ about 25%. Generally not distinct "eyes" or augen as in DDH 39. Recovery 100%.
523-528	Dark green and gray mottled talcose marble. CO ₃ greater than 50% in swirls. Recovery 100%.
528-533	Dark green and gray mottled talc-carbonate. CO ₃ about 20%. Recovery 100%.
533-538	Mottled dark green and gray talcose marble. Up to 6 in. zones of dirty spotted carbonate present. CO ₃ about 50%. Note: Recovery 100% (from 532.4 ft to 552.4 ft = 20.9 ft! about 105% recovery) Labelling in box probably wrong.
538-543	Mottled gray and dark green talcose marble. CO ₃ greater than 50% and contains some dark spots (dirty). Recovery 100%.
543-548	Spotted and mottled gray to greenish gray talcose (?) marble. CO ₃ probably greater than 75%. 1/4 in. spots of CO ₃ in chloritic or talcose zones. Recovery 100%.
548-553	Gray to greenish gray talcose marble. CO ₃ less than 50%. Rock has mottled and spotty appearance. Underlying rock grades from 6-8 in. of chlorite schist into an almost gneissic quartz-biotite (chlorite?) schist. 1 in. of apple green to white talc very close to the contact. This could indicate alteration of host rock. Recovery 100%.

A-4

J&J-0005218

Exhibit 1 - continued

DDH 6-67 H

<u>Interval (ft)</u>	<u>Description</u>
139-141.7	Dark greenish gray talc-marble schist CO ₃ about 50%. CO ₃ is pink in color, probably dolomite. Crystals up to 3/8 in. in diameter, curved cleavages. Overlain and underlain by quartz-biotite schist. Recovery 82%.
149-153	Dark greenish gray talcose marble to calcareous talc schist. CO ₃ 25-50% in blebs and veins (2½ in). Color cream to light flesh color. Recovery 58%.
159-164	Dark gray to light gray green talc schist containing about 25% carbonate. CO ₃ is cream to flesh colored. Recovery about 100%.
164-169	Light to dark greenish gray schistose talc marble. CO ₃ about 50% in flesh to cream colored blebs and stringers. Recovery 100%.
169-174	Chloritic talcose marble. CO ₃ about 50%. CO ₃ in flesh colored blebs (½ in.) and splotches. Recovery about 30%. Note: 173.5-175 = quartz-biotite schist 50% recovery.
175-177	2 ft of light greenish gray talc-chlorite schist. Some rectangular spots of chlorite within the talc saved for thin section. Overlain by quartz-biotite schist (1 ft) and underlain by quartzose biotite-chlorite schist. Recovery 100%.

Exhibit 1 - continued

DDH 21-67 H

<u>Interval (ft)</u>	<u>Description</u>
765.1-770.4	Contorted dark green biotite-chlorite schist. Some small blebs (2 mm) of carbonate. No obvious talc present. Pretty uniform - no actinolitic rocks seen in this interval. Underlain by bull quartz and quartz-biotite schist to gneiss. Overlain by 40 ft of chlorite schist which contains pink garnets (~5 mm) in zones. Some thin (1-5 mm) calcite and quartz veins. Recovery 98%.

A-6

J&J-0005220

Exhibit 1 - continued

DDH 34-67 H

Interval (ft)	Description
507-512	Black pyritic quartz-biotite schist overlying 3 in. of chlorite-talc schist, overlaying 5 ft of talcose marble. CO ₃ flesh colored. CO ₃ about 50%. Recovery about 100%.
512-517	Light to dark greenish gray talcose marble. CO ₃ about 50%, flesh colored to cream colored. Recovery about 100%.
517-522	Light to dark greenish gray talcose marble. CO ₃ about 50%, flesh to cream colored. Recovery about 100%.
522-527	Light to dark green talcose marble to calcareous-talc schist. CO ₃ 25-50% in flesh to cream colored blebs and swirls. Recovery about 100%.
527-532	Light to dark greenish gray talc marble. CO ₃ 30-50% in flesh to cream colored blebs and swirls. Crystals of CO ₃ up to $\frac{1}{2}$ in. in diameter. Recovery 100%.
532-537	Light green talcose marble. CO ₃ about 50% except for 8 in. of solid carbonate at 535 ft. CO ₃ cream colored. Recovery 100%.
537-542	Light to dark greenish gray talcose marble. Base grades into deformed biotitic schist containing many small blebs (<1 mm) and veinlets (<1 mm) of calcite. This grades down into a garnetiferous, epidotic quartz-biotite schist. Hole bottom at 554 ft. Recovery 100%

A-7

J&J-0005221

Exhibit 1 - continued

DDH 35-67 H

<u>Interval (ft)</u>	<u>Description</u>
382.5-387.5	Pinkish green to light greenish gray talcose marble. CO ₃ over 50%. CO ₃ is flesh to cream colored non-calcite. Talc mostly light apple green variety. Chlorite schist with minor biotite hanging wall (1 ft) overlain by pinkish, dark gray quartz-biotite schist containing some garnets. Recovery 100%.
387.5-392.5	Light greenish gray talcose marble. CO ₃ is flesh to cream colored. Grades from apple green talc at top to darker (chloritic) at bottom. Contains 1 ft of dark green chlorite schist with blebs of white talc. Recovery 100%.
392.5-397.5	2 ft light greenish gray talcose marble (CO ₃ >50%) underlain by 3 ft of dark green chlorite schist containing (<10%) talc blebs and spots. Recovery 100%.
397.5-402.5	Dark green chlorite containing laths and cubes of talc (white) and CO ₃ (<10%). Some of this section is the lighter talcose marble CO ₃ ~30%. Recovery 100%.
402.5-404.5	Light gray talcose marble. CO ₃ white to flesh colored. CO ₃ >50%. Core badly ground up. Recovery 50%.
404.5-410.5	Light to dark grayish green talcose marble. CO ₃ about 30%. Underlain by 1.5 ft of crenulated chlorite schist ("blackwall") which becomes biotitic and grades into a garnetiferous quartz-biotite schist. Recovery 100%.

Exhibit 1 - continued

DDH 36-67 H

<u>Interval (ft)</u>	<u>Description</u>
399.2-405.5	Top part almost solid chloritic talc schist. Below this is a spotted to mottled talc marble. CO ₂ augen have black specks or "nuclei" overlain by chlorite schist with some talc. Overlain by quartz-biotite schist. Recovery 86%.
405.5-421	Mottled dark grayish green and cream talcose marble. CO ₂ about 50%. Recovery 43%.
421.5-425.5	Mottled dark greenish gray and cream talcose marble. CO ₂ up to 50% average. One 2 in. band present - white rather than fleshy cream color. Recovery 100%.
425.5-430.5	Mottled light green, dark greenish gray and cream talcose marble. CO ₂ about 30%. Some light apple green talc stringers. Recovery 100%.
430.5-435.5	Mottled dark greenish gray and cream talcose marble. CO ₂ about 25%. Recovery 100%.
435.5-440	Mottled and banded dark greenish gray and cream talcose marble. CO ₂ about 50%. Some "algal" structures at 437-438 ft. Recovery 100%.
440-444.5	Mottled dark greenish gray and cream talcose marble. CO ₂ about 50%. Recovery 73%.
444.5-451.2	Mottled dark green and cream talc carbonate (marble) underlain by at least 2 ft of dark green pure talc-chlorite schist. CO ₂ in upper zone less than 25%. Recovery 70%.

Exhibit 1 - continued

D00 56-67 H (continued)

<u>Interval (ft)</u>	<u>Description</u>
451.2-457.8	Dark and light-green banded talc-chlorite schist with about 2 ft of talcose chloritic marble in center of section. Bands of talc are the light apple green. Core mostly "washers" of schist. Recovery 70%.
457.8-465.8	Mottled dark greenish gray talcose marble. CO ₂ about 50%. Underlain by 6 in. of pure chlorite schist (sharp contact) underlain gradually by biotite-chlorite schist (6 in.) underlain by calcareous quartz-biotite schist. 6 ft down is a 1 ft layer of quartzite with a few biotite stringers. Quartz-biotite schist below this. Hole bottom 477.6 ft. Recovery 100%.

A-10

J&J-0005224

Exhibit 1 - continued

DDH 37-67 H

<u>Interval (ft)</u>	<u>Description</u>
362.6-367.5	Black quartz-biotite schist, 1 in. quartzite, 2 ft black quartz-biotite schist, 3 in. chlorite-biotite (?) schist, 1.5 ft very dark green chloritic talc, underlain by mottled and spotted dark greenish gray and cream talcose marble. CO ₂ in this portion about 50%. Recovery 95+%.
367.5-377	Mottled to banded, light to dark green and grayish green, talcose marble, CO ₂ about 30%. Some of the augen of carbonate have dark nuclei. Recovery 61%.
377-386	2 ft of black talcose (?) or chloritic (?) biotite "cinder" overlain by a light greenish gray talc carbonate gneiss. CO ₂ about 50%. Talc is present as the light apple green in many zones. Recovery 61%.
386-389	Mottled, spotty dark greenish gray and cream talc marble. CO ₂ greater than 50%. Recovery 100%.
389-394	Banded and mottled dark gray to dark greenish gray chloritic talc marble. CO ₂ about 25%. Chlorite abundant. Recovery 100%.
394-399	Mottled to banded, light to dark greenish gray talc marble with some round single crystal blebs of carbonate. CO ₂ probably slightly less than 50%. Some light apple green talc present. Recovery 100%.
399-404	Spotted to mottled, light to dark greenish gray talc marble. Much light green talc. Carbonate probably slightly less than 50%. Some specks of biotite dispersed here and there in the core. Recovery 100%.

A-11

J&J-0005225

Exhibit 1 - continued

DDH 37-67 H (continued)

<u>Interval (ft)</u>	<u>Description</u>
404-409	Mottled dark greenish gray and cream talc marble. CO ₃ about 35%. Recovery 100%.
409-414	Spotty dark greenish gray talc marble. CO ₃ occurs as blebs ~1 in. and a couple of 2 in. zones of coarsely crystalline CO ₃ . A couple of thin zones of apple green talc. Recovery 100%.
414-419	Mottled dark greenish gray and gray talcose marble. CO ₃ about 25%. Recovery 100%.
419-424	Gray to dark greenish gray talcose chloritic marble. CO ₃ probably greater than 50%. Recovery 100%.
424-429	Mottled dark green and gray talcose chloritic marble. CO ₃ probably about 50% in bands and swirls. Sort of a gray verde antique. Recovery 100%.
429-434	Dark green talcose chloritic marble. CO ₃ probably 10% or less. Chlorite abundant. Recovery 100%.
434-439.2	Dark green to gray talcose, chloritic marble. Carbonate less than 25%. Recovery 100%
439.2-491	No sample - Verde antique marble with a few $\frac{1}{4}$ in. talc veins within 9 ft of the top and bottom of this zone. The green matrix appears to be mostly chlorite, bands and swirls of carbonate. Some minor talc. Looks a lot like the "talc zone" in DDH 38-67 H. Recovery 100%.
439.2-444	Mottled dark green and white talc-chlorite marble. Verde antique. Fairly hard. Recovery 100%.

Exhibit 1 - continued

DDH 37-67 H (continued)

Interval (ft)	Description
444-449	Dark green and white talc-chlorite marble. CO ₃ >50%. Fairly hard rock. Recovery 100%.
449-454	Dark green and mottled white talc-chlorite marble. Verde antique. CO ₃ <50%. Some small "cut and fill" type structures at 451 ft. Recovery 100%.
476-481	Dark green talcose chlorite marble. Verde antique. Minor talc content. Carbonate in white streaks. Recovery 100%.
481-486	Dark green talcose chlorite marble. Verde antique. CO ₃ in white bands and swirls about 25-30%. Recovery 100%.
486-491	Dark green talcose chlorite marble. Grades down fairly quickly into light to dark greenish gray talc marble. CO ₃ in bands, swirls and spots. Some minor veinlets of talc. Recovery 100%.
491-497	Mottled and banded talcose marble. Grades from light grayish green at the bottom into dark green verde antique at the top. Talc content decreases upwards, chlorite and carbonate content increases. Carbonates found in bands and veins. Recovery 100%.
497-505	Mottled dark greenish gray talcose marble. CO ₃ about 25%. Some structures which resemble snail fossils (see mark at 502). Recovery 67%.
505-513	Dark grayish green mottled talcose marble. CO ₃ about 50%. Many structures which look like relict sedimentary features. Recovery 67%.

A-13

J&J-0005227

JNJAZ55_000015214

Exhibit 1 - continued

DDH 37-67 H (continued)

Interval (ft)	Description
513-518	2 in. dark green mudstone at 515.2 same as in DDH 38 at 494 ft. No alteration on it or around it. Core is dark grayish green and gray talcose marble. CO ₃ about 50%. Recovery 100%.
518-523	Dark greenish gray talc schist. Carbonate probably up to 25%. Intersperses throughout the talc. Recovery 100%.
528.2-523	Dark green talc schist with some minor (<25%) carbonate blebs and mottling. Some $\frac{1}{2}$ in. veinlets of apple green talc. Underlain by 3 ft of impure, muddy, biotitic chlorite schist which grades into a quartz-biotite schist. Recovery 100%.

Exhibit 1 - continued

DDH 39-67 H

Interval (ft)	Description
454-459	Dark gray talcose chlorite schist and white carbonate sections up to 2 in. Overlain by quartz-biotite schist which has bands of quartzite up to 2 in. thick present. No immediately obvious difference between the hanging wall (this sample) and the footwall rocks. Recovery 20%.
459-469	White to greenish gray chloritic talc schist. Some carbonate augen. Recovery 45%.
469-479	White to greenish gray talc schist. Recovery 45%.
479-484	Gray to greenish gray calcareous talc schist. Augen of carbonate up to 1 in. diameter. CO ₃ about 25%. Recovery 84%.
484-489	Gray to greenish gray talc schist. Augen of carbonate up to 1 in. diameter. CO ₃ about 25%. Recovery 84%.
489-495	Gray to greenish talc-carbonate schist. CO ₃ up to 50%. Augen of CO ₃ up to 1 in. diameter. Recovery 84%.
495-500	Dark gray to greenish gray talc-carbonate schist. CO ₃ about 25-40% of rocks. Some small nuclei (dark) in the white CO ₃ augen which are up to 3/4 in. in diameter. Recovery 100%.
500-505	Dark gray to greenish gray talc-carbonate schist. CO ₃ ~50% with augen up to 1 in. Recovery 100%.
505-510	Dark gray to greenish gray talc-carbonate schist. Augen smaller and more plentiful. CO ₃ ~50%. Some almost clear apple green translucent talc present. Recovery 100%.

A-15

J&J-0005229

Exhibit 1 - continued

DDH 39-67 H (continued)

Interval (ft)	Description
510-515	Dark gray to greenish gray talc-carbonate schist. CO ₃ ~50%. Some translucent apple green talc present. Recovery 100%.
515-520	Dark bluish gray to greenish gray talc-carbonate schist. Mottled with small ($\frac{1}{2}$ in.) augen of carbonate some of which have black "nuclei". Recovery 100%.
520-525	Bluish gray to greenish gray talc-carbonate schist. CO ₃ augen about 25-30% of rock. Contains a couple of 1 in. bands of apple green translucent talc. Recovery 100%.
525-530	Bluish gray to greenish gray talc-carbonate schist. Some $\frac{1}{2}$ in. augen of CO ₃ contains black "nuclei". CO ₃ about 30-40%. Recovery 100%.
530-535	Banded dark bluish to greenish gray and white to gray talc-carbonate schist. Almost gneissic. CO ₃ about 50%. Recovery 100%.
535-540	Dark greenish gray talc-carbonate schist. Crystals of carbonate $\frac{1}{2}$ in. CO ₃ about 50% of rock.
540-545	Mottled greenish gray and white talc-carbonate schist. About 50% CO ₃ in bands and blebs. Some of the CO ₃ augen ($\frac{1}{2}$ in.) have dark "nuclei". Recovery 100%.
545-549	Grades from banded and mottled white and greenish gray talc-carbonate into 6 in. of extremely soft talc-chlorite schist. This is underlain by vermicular chlorite schist. 2 in. of coarse grained quartzite at base of talc and chlorite. Beneath this is a quartz-biotite schist with distinct bands of quartz plus mixed zones quartz and biotite. Recovery 100%.

Exhibit 1 - continued

DDH 40-67 H

Interval
(ft)

Description

488-496

Green to brownish green chlorite-talc schist.
Carbonates ~25%.
Recovery 39%.

496-505

Green to brownish talc-~~chlorite~~ schist. Up to
25% carbonates.
Recovery 30%.

Exhibit 1 - continued

DDH 41-67 H

<u>Interval (ft)</u>	<u>Description</u>
594-599	Grayish green talc schist. Minor carbonates. Recovery 100%.
599-604	Dark greenish brown chloritic talc schist. Car- bonate ~25%. Recovery 100%.
604-608½	Greenish gray chloritic talc schist. (Chlorite about equals talc in amount.) Abundant carbonate. (Up to 25%). Recovery 100%.

Exhibit 1 - continued

DDH 44-67 H

<u>Interval (ft)</u>	<u>Description</u>
299-304	Black to dark greenish brown chloritic biotite schist. Non talcose. Recovery 100%.
304-309	Dark brown to greenish brown chlorite schist. Some biotite. Some thin stringers of carbonate and quartzite. Non talcose. Recovery 100%.

Exhibit 1 - continued

DDH 45-67 H

Interval
(ft)

Description

903-905

Dark brown quartz-biotite schist with some $\frac{1}{2}$ in.
crystals of green actinolite. 4 in. of coarse
grained quartzite. Non ~~talcose~~.
Recovery 15%.

Exhibit 1 - continued

DDH 46-68 H

<u>Interval (ft)</u>	<u>Description</u>
580-586	Dark brown chlorite schist. Two light colored $\frac{1}{4}$ in. zones. Not talcose. Some carbonates. Recovery 100%.

Exhibit 1 - continued

DDH 49-68 H

<u>Interval (ft)</u>	<u>Description</u>
973-976	Gray to black chlorite schist. Coarse grained. Some greenish zones. Recovery 100%.
980-986 $\frac{1}{2}$	Dark grayish brown biotitic chlorite schist. One 2 in. quartzite stringer. Non-talcose. Recovery 100%.

Exhibit 1 - continued

DDH 50-68 H

Interval
(ft)

Description

889-893

Dark gray to black chlorite schist. Carbonates
-25%. Not talcose.
Recovery 37%.

Exhibit 1 - continued

DDH 55-68 H

<u>Interval (ft)</u>	<u>Description</u>
692-697	Green to brownish green chloritic talc schist. Carbonate ~25%. Recovery 71%.
697-704	Brownish green to grayish green chloritic (25%) talc (50%) schist. About 25% carbonate. Recovery 71%.
704-706	Talcosse gray to grayish brown chlorite schist. Carbonate up to 50% in zones. Recovery 71%.
706-712	Dark greenish gray talc marble schist. CO ₂ varies from about 50% near top to less than 10% near the base. Much apple green talc near base. Under- lain by 1 ft of talc-chlorite-biotite schist underlain by quartz-biotite schist. Recovery 84%.

EXHIBIT 2

PETROGRAPHIC EXAMINATIONS

Glossary: The following definitions of terms used to describe rocks and thin sections are furnished for the convenience of the reader.

Foliation -- A laminated structure resulting from segregation of different minerals into parallel layers.

Schistosity -- Synonymous with foliation when used to describe the structure of schists.

Lineation -- Narrow streaks of minerals, or mineral fragments, strung through a rock as discontinuous but parallel lines.

Spar Type Carbonates -- A carbonate particle that has not been granulated, i.e., uncrushed (or possibly epigenetic) carbonate particle.

Granulated Carbonate -- Carbonate particles that are derived from the crushing of larger spar type carbonate particles.

Augen -- Large lenticular mineral grains or aggregates of minerals which in cross-section have the shape of an eye.

Retrogressive Metamorphism -- Includes the changes that take place when a rock, that was formed by relatively intense metamorphism, is altered within an environment of lower-grade metamorphism.

Gneiss -- A coarse-grained rock in which bands rich in granular minerals alternate with bands in which schistose minerals predominate.

Schist -- A medium- or coarse-grained metamorphic rock with subparallel orientation of micaceous minerals which dominate its composition.

Marble -- A metamorphic rock composed essentially of calcite and/or dolomite and/or magnesite.

Exhibit 2 - continued

Curved Trains of Minerals -- This term is used to indicate a situation in which finer-grained schistose components are bent around a larger mineral grain or group of larger mineral grains.

Schistose Marble -- A rock containing more than 50% carbonate particles intermixed with seams of schistose material.

Marble Schist -- A rock containing less than 50% carbonate particles intermixed with large areas or seams of schistose material.

Sample Descriptions: The specimens submitted for thin-section analysis are described below. Each rock is described macroscopically, then the details of the petrographic analysis follow. The numbers applied to the samples (such as 2H-301) indicate the drill-hole number from which the sample was taken (i.e., drill hole 2-67H) and the depth within that hole at which the sample was taken (i.e., 301 feet). Eleven holes were drilled in 1966 (1-66H through 11-66H) but the core was not retained. In 1967, drilling commenced again with hole No. 1-67H. All of the sample numbers used herein refer to drilling during 1967 and 1968.

Exhibit 2 - continued

Specimen 2H-301:

In hand specimen this is a grayish black rock exhibiting a schistose structure. The grayish black groundmass is fine grained and contains some light brownish gray ~~particles~~, possibly garnet, ranging in size from 1.0 to 6.0 mm. The ~~schistose~~ structure appears in curved mineral trains around ~~these~~ larger particles giving the rock an augen schist appearance.

In thin section the rock consists of a moderate amount of lineated mica laths (possibly biotite) intermixed with a moderate amount of granulated quartz and a minor amount of granulated feldspar particles (Photomicrograph 1A). All minerals show some degree of straining. The light brownish gray phenocrysts noted in hand specimen appear as fine-grained, opaque, clay-like particles with chlorite inclusions progressing from the contact with the host rock inward (Photomicrograph 1B). It is possible these phenocrysts may be highly weathered garnet crystals that have undergone roll type abrasion during metamorphism. This rock may be classified as a garnetiferous quartz-biotite augen schist.



1 A



1 B.

Photomicrograph No. 1A. Specimen 2H-301 showing granulated quartz grains and lineated biotite laths forming a schistose texture.

Photomicrograph No. 1B. Specimen 2H-301 showing a highly weathered garnet? crystal with an irregular chlorite inclusion (portion outlined with dashed line). The lower quarter of the photomicrograph is another portion of the host rock similar to photomicrograph No. 1A.

Scale

0.1 mm

Crossed polarizers

Exhibit 2 - continued

Specimen 6H-139:

In hand specimen this is a medium light gray porphyritic rock containing many moderate yellowish brown carbonate particles that range in size from 1.0 mm to 2.5 cm. Grayish black schistose seams ranging from 1.0 to 4.0 mm wide are ~~present~~ in the rock as curved mineral trains around the larger ~~carbonate~~ particles. Some embayment of these dark schistose ~~seams~~ into the carbonate particles is apparent.

In thin section the rock consists of a major amount of carbonate particles ranging from granulated masses having grain sizes ranging from 0.1 to 1.0 mm to large particles measuring over 1 cm. These are the phenocrysts noted in hand specimen. There is a moderate amount of chlorite occurring as laminar seam fillings (Photomicrograph 2). These are probably the dark gray seams noted in hand specimen. A moderate amount of talc was noted that occurs mainly as fine-grained foliated masses intermixed with fine-grained chlorite. This probably makes up the bulk of the medium light gray host rock noted in hand specimen. Some platy talc grains were noted in the foliated fine-grained talc and chlorite intermixture. These plates were elongated and tended to subparallel the foliated texture. This rock may be classified as an schistose augen marble.



Photomicrograph No. 2. Specimen 6H-139 showing a foliated mixture of talc and chlorite (A), a chlorite seam (B) and variable sized carbonate particles (C).

Scale
0.1 mm

Crossed polarizers

A-30

J&J-0005244

Exhibit 2 - continued

Specimen 6H-141:

In hand specimen this is a medium light gray rock exhibiting curved mineral trains of schistose material around grayish orange carbonate eyes ranging from 3.0 mm to 1.5 cm. Thin grayish black seams were noted in the rock that parallel the foliation and are in contact with most of the phenocrysts.

In thin section the rock consists of variable sized carbonate particles, some ranging over 1.0 cm, set in a fine-grained foliated matrix of intermixed talc and chlorite. These are probably the dark seams noted in hand specimen. Most platy talc occurs as elongated particles subparalleling the schistosity of the fine-grained talc-chlorite mixture. A few individual talc plates were noted that were surrounded by the curved mineral trains (Photomicrograph 3). This rock may be classified as a marble augen schist.

A-31

J&J-0005245



Photomicrograph No. 3. Specimen 6H-141 showing irregular platy talc grains (A) set in a fine grained foliated matrix of talc and chlorite (B). Note curved mineral trains of the fine grained talc and chlorite intermixture around the platy talc grains.

Scale
0.1 mm

Crossed polarizers

A-32

J&J-0005246

Exhibit 2 - continued

Specimen 6H-150:

In hand specimen this rock is characterized by a large, fine-grained, bluish gray to bluish white, dense zone surrounded by pinkish gray carbonate eyes about 6.0 mm in diameter. These augen are surrounded by many grayish black schistose curved mineral trains.

In thin section the rock consists of a major amount of fine-grained foliated talc that is probably intermixed with fine-grained chlorite. Some platy talc was noted that occurred as elongated particles and paralleled the foliation (Photomicrograph 4). The carbonate particles in the rock occurred as fine-grained aggregates and as relatively large crystals. Some fine-grained carbonate may be intermixed with the fine-grained talc and chlorite. Chlorite was also noted concentrated in schistose curved mineral trains throughout the rock. This rock may be classified as an augen marble schist.



Photomicrograph No. 4. Specimen 6H-150 showing elongated platy talc grains (darker areas) set in a fine grained foliated mixture of talc and chlorite.

Scale
0.1 mm

Crossed polarizers

Exhibit 2 - continued

Specimen 6H-167:

In hand specimen this is a greenish gray schistose rock with a bluish white band ranging from 1.0 cm to 2.0 cm wide. One large white carbonate grain was noted that measured 1.0 cm by 0.5 cm. The schistosity curved around this carbonate grain.

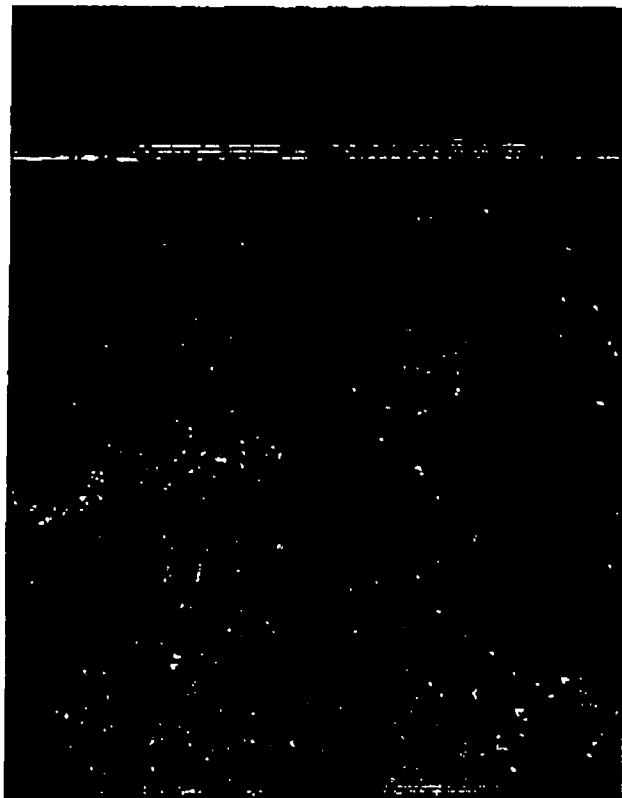
In thin section the majority of the ~~rock~~ was composed of a fine-grained foliated material believed to be primarily talc with intermixtures of chlorite. Some platy talc was noted that occurred as elongated particles subparallel to the foliation of the fine-grained talc and chlorite. Carbonate in this slide was relatively minor, occurring primarily as large, isolated grains. Many embayments of the fine-grained, talcose, foliated material into the carbonate particles were noted. Chlorite also occurred as isolated thin seams and appeared, optically, to be concentrated at the contacts of the fine-grained talcose material and the carbonate particles. To confirm this point, an electron microprobe traverse was made across an embayment of the fine-grained talcose material into a carbonate particle (Photomicrograph 5). The line X-X' on the photomicrograph is the approximate line of traverse. Figure 1 shows the results of the line scans for the elements Mg, Al, and Si. As can be noted the scan for Mg shows a slight drop in intensity across the talcose seam area indicating a slightly lesser amount of Mg in the talcose seam than in the carbonate particles. The scan for Si

Exhibit 2 - continued

shows a drastic increase across the talcose seam and the scan for Al shows increases at the boundaries of the fine-grained talcose seam and the carbonate particles. In essence the above indicates:

1. The carbonate particle is magnesite - MgCO_3 .
2. The bulk of the talc seam contains primarily Mg and Si indicating talc - $\text{Mg}_3(\text{OH})_2(\text{Si}_2\text{O}_5)_2$.
3. The contact areas between the fine-grained talcose embayment and the carbonate particle contain Mg, Al, and Si indicating a chlorite type - $\text{Mg}[4.9-5.3] \text{Al}(\text{Si}_{2.3-3.2}\text{Al}_{0.8-1.7})\text{O}_{10}(\text{OH})_8$.

This rock may be classified as a talc-chlorite augen schist. The concentration of chlorite at the talc-carbonate contact indicates some degree of retrogressive metamorphism.



Photomicrograph No. 5. Specimen 6H-167 showing a fine grained talc-chlorite embayment in a carbonate particle.

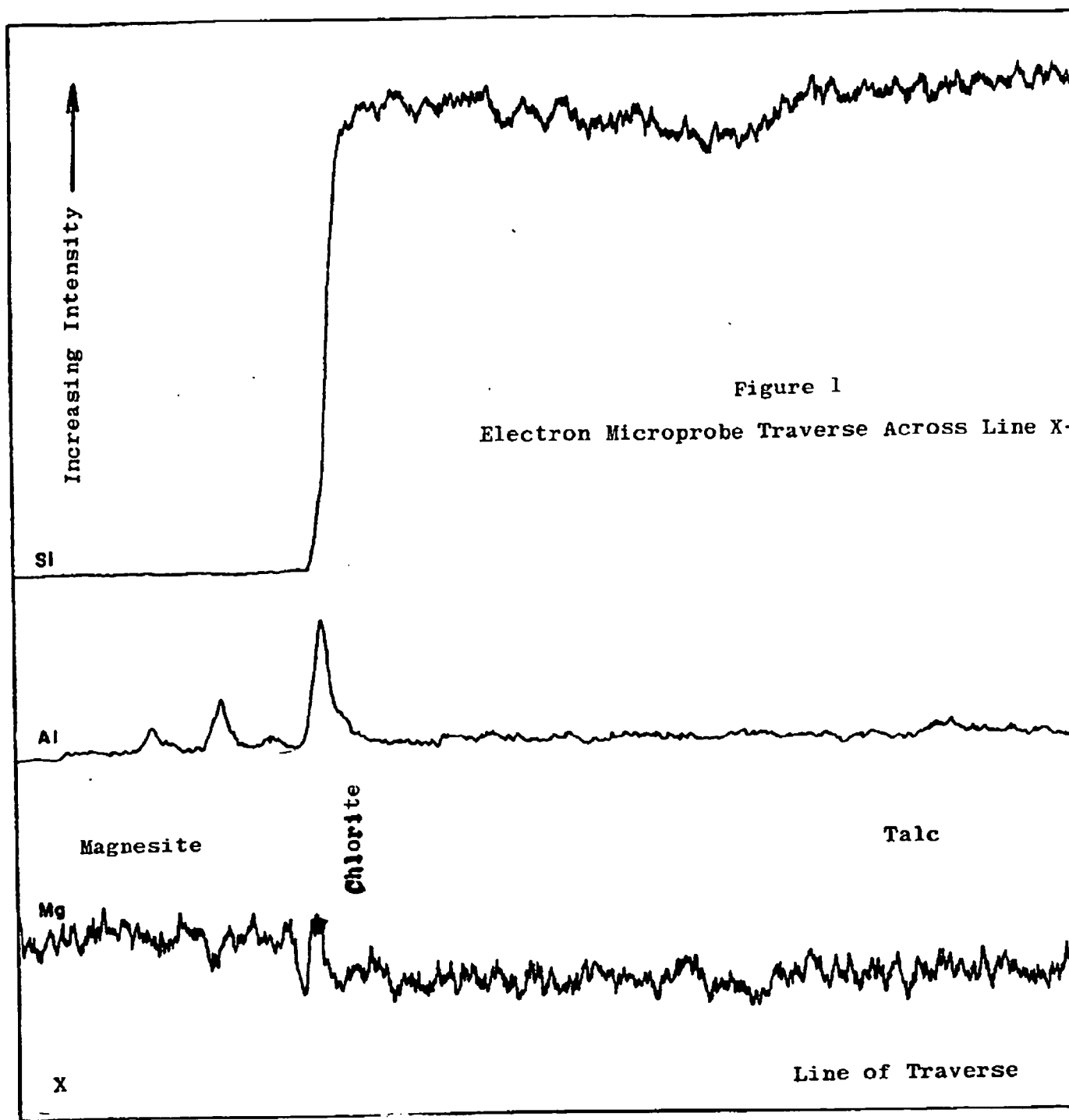
- (A) Fine grained talc-chlorite intermixture.
- (B) Magnesite, MgCO_3 , particle.
- (C) Chlorite seam.
- (D) X-X' approximate electron microprobe traverse shown in Figure 1.

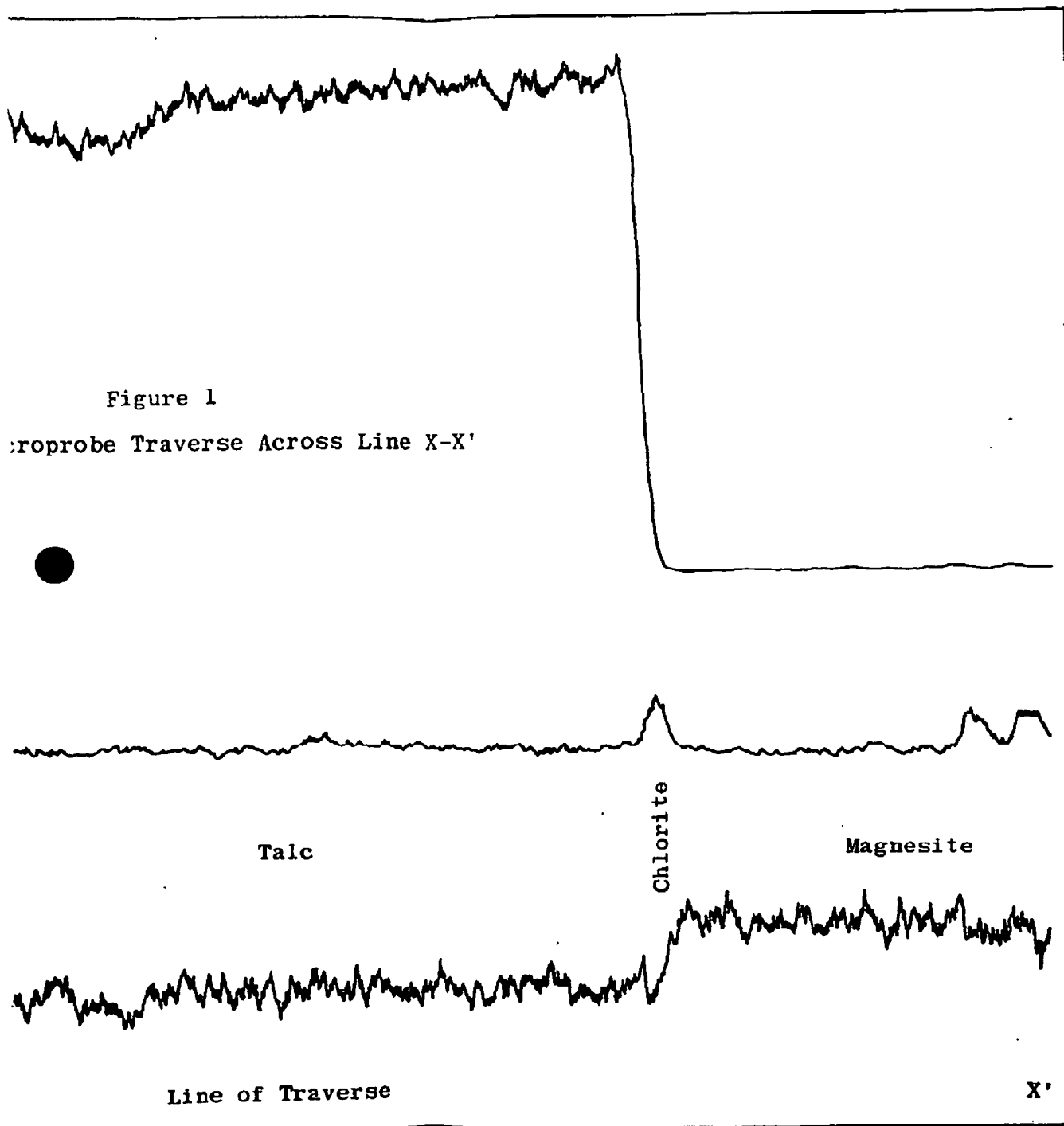
Scale
0.1 mm

Crossed polarizers

A-37

J&J-0005251





J&J-0005253

Exhibit 2 - continued

Specimen 6H-169:

In hand specimen this is a medium dark gray foliated rock containing numerous yellowish gray carbonate eyes. These eyes range in size from 1.0 mm to about 2.0 cm. Dark grayish black thin schistose seams occur as curved mineral trains around the carbonate eyes.

In thin section the specimen consisted of major carbonate and moderate talc and chlorite. About one-half of the carbonate occurred as large grains that were partially or wholly shattered along crystalline boundaries. The other half occurred as granulated areas, some subparalleling the foliation of the host rock. The host rock was a fine-grained foliated mixture of talc and chlorite with some recognizable thin chlorite seams. Some platy-talc grains were noted that were elongated and tended to follow the schistosity of the fine-grained talc and chlorite mixture. This rock may be classified as a schistose augen marble.

Exhibit 2 - continued

Specimen 6H-176:

In hand specimen this is an olive gray rock containing some carbonate eyes ranging in size from 1.0 mm to 7.0 mm. The specimen contains some indistinct grayish black seams. The foliation is not as pronounced as in previous samples.

In thin section most of the specimen consists of platy-talc grains intergrown with about equal amounts of fine-grained talc and chlorite (Photomicrograph 6). A finer-grained talc and chlorite is somewhat foliated and a few isolated elongated platy-talc grains paralleling the foliation were noted. The larger platy-talc grains, as shown in Photomicrograph 6, invariably have many fibrous-talc, and possibly tremolite-actinolite inclusions. The carbonate occurred as isolated grains, some of which showed embayments of the finer-grained talc and chlorite. Some distinct, thin, chlorite seams were noted occurring as curved mineral trains throughout the specimen. This rock may be classified as a talc-chlorite schist.



Photomicrograph No. 6. Specimen 6H-176 showing associations of platy talc grains with fibrous inclusions (A), finer grained intermixtures of talc and chlorite (B) and a carbonate particle (C).

Scale
0.1 mm

Crossed polarizers

A-41

J&J-0005256

Exhibit 2 - continued

Specimen 31H-507C:

In hand specimen this is a grayish black very-fine-grained rock showing a very-finely-divided foliation. Some very thin bluish white intermittent seams were noted that parallel the foliation.

In thin section the specimen consisted ~~almost~~ wholly of foliated chlorite particles. Intermixed ~~with this~~ foliated chlorite was a minor amount of platy talc that tended to sub-parallel the foliated texture (Photomicrograph 7). No carbonate particles were observed. A trace amount of small lath-like biotite particles was noted intermixed with the chlorite. This rock may be classified as a chlorite schist.



Photomicrograph No. 7. Specimen 34H-507C showing platy talc grains (A) in a foliated chlorite matrix (B).

Scale
—
0.1 mm

Crossed polarizers

A-43

J&J-0005258

Exhibit 2 - continued

Specimen 34H-518:

In hand specimen this is a foliated rock containing carbonate augen ranging in size from 2.0 mm to 1.5 cm. Grayish olive and light bluish gray seams ranging from 0.1 mm to 5.0 mm wide occur as curved mineral trains around the carbonate eyes.

In thin section the specimen consists of fine-grained, foliated-talc and/or chlorite areas and other distinct thin foliated seams that appear to be primarily chloritic. A moderate amount of carbonate, occurring mostly as relatively fine-grained aggregates, tends to be lineated and subparallels the foliated rock texture. Very little embayment of the fine-grained talc and chlorite into the carbonate was noted. This rock may be classified as an augen marble schist.

A-44

J&J-0005259

Exhibit 2 - continued

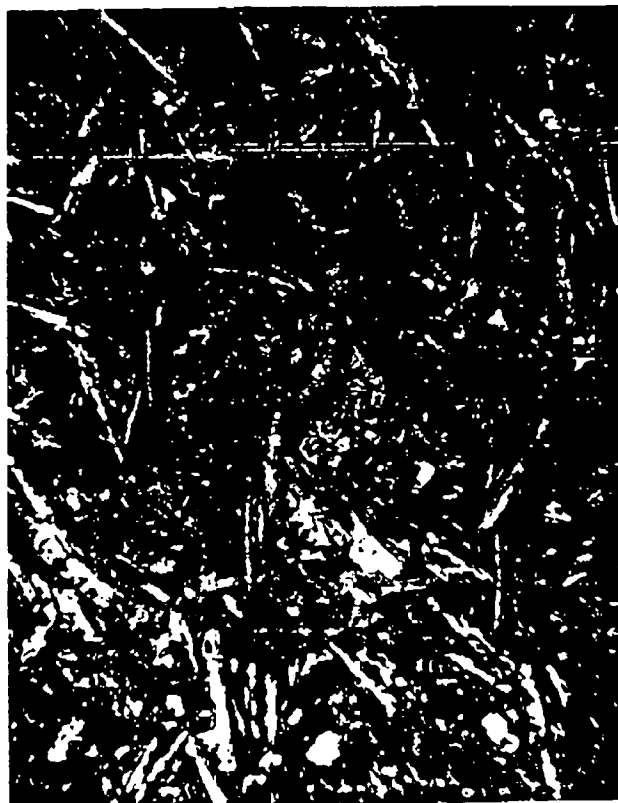
Specimen 35H-153:

In hand specimen this is an extremely fine-grained, grayish-black aphanitic rock. In reflected light some very tiny white crystals were noted.

In thin section the rock consisted of highly strained, subparallel feldspar laths set in an ~~extremely~~ fine-grained and highly-weathered groundmass (Photomicrograph 8). High magnification examination of this groundmass suggested it to be composed of a felty mat of extremely fine-grained feldspar laths possibly intermixed with quartz, clay, and a glassy phase. Some eroded talc or chlorite plates were noted as inclusions in the rock. These plates, in places, yielded undulatory extinction and possessed fibrous talc and/or tremolite-actinolite inclusions. Due to the high degree of straining and weathering no definite rock classification could be made, but, the rock has indications of being a highly altered basalt.

A-45

J&J-0005260



Photomicrograph No. 8. Specimen 35H-153 showing strained feldspar laths set in a highly weathered fine grained opaque groundmass. The outlined area is a platy talc or chlorite grain.

Scale
—
0.1 mm

Crossed polarizers

A-46

J&J-0005261

Exhibit 2 - continued

Specimen 35H-164:

In hand specimen this is a rock showing a contact zone between an aphanitic grayish black rock similar to 35H-153 and a schistose grayish black rock. No distortion of the ~~the~~ **lanellae** are apparent at the contact. There appears to be an **altered** zone in the aphanitic grayish black rock along the **contact**. This zone is in the form of a slightly lighter colored band about 4.0 mm wide.

In thin section the schistose rock appears similar to 2H-301 (Photomicrograph 1) except the biotite laths are not as well defined. The schistose rock consists mainly of lineated biotite laths intermixed with granulated quartz and lesser amount of feldspar. Some degree of straining was noted in almost all crystals. The dense aphanitic contact rock is very similar to the weathered basalt noted in 35H-153. Most of the contact zone is sharp but in a few places frayed ends of the biotite were noted extending into the basalt. In one area a xenolith of schist was noted in the basalt (Photomicrograph 9). A definite flow-structure lineation of feldspar laths around the xenolith is apparent, indicating the basalt was intruded into the schist. A higher concentration of fine-grained, opaque, weathered material was noted in the basalt in the vicinity of the contact. Some irregular chlorite blebs were also noted in the schist. These factors may indicate some degree of hydrothermal alteration.

A-47

J&J-0005262

Exhibit 2 - continued

This rock may be classified as a contact between a basalt and a
quartz-biotite schist.

A-48

J&J-0005263



Photomicrograph No. 9. Specimen 35H-164 showing the contact between the quartz biotite schist (A) and the basalt (B). (X) is a xenolith of the quartz biotite schist in the basalt.

Scale
0.1 mm

Crossed polarizers

Exhibit 2 - continued

Specimen 35H-223A:

In hand specimen this is a grayish black rock possessing finely defined schistosity. There is a large quartz particle in the rock about 1.5 cm in diameter. Also in the rock is a milky white band about 0.5 mm wide directly underlain by a black, dense, fine-grained zone about 0.5 mm wide. ~~Some~~ very thin stringers of a bronze colored metallic ~~were~~ **visible** throughout the rock. These metallic stringers were parallel to the foliation in all cases.

In thin section the bulk of the rock consists of sub-parallel laths of chlorite and lesser amounts of biotite that are intermixed with areas of granulated quartz and lesser amounts of feldspar. There are some relatively large biotite grains that are not oriented with the foliated texture. The black, dense, aphanitic zone noted in the hand specimen is tremolite-actinolite (Photomicrograph 10). The milky white zone directly overlying the tremolite-actinolite zone is a granulated mixture of quartz and strained feldspar. The large particle noted was quartz. The thin metallic seams noted in the hand specimen were opaque and could not be positively identified in thin section. This rock may be classified as a chlorite schist with inclusions of tremolite-actinolite, quartz and granulated mixtures of quartz and feldspar.

A-50

J&J-0005265



Photomicrograph No. 10. Specimen 35H-223A showing
radiating tremolite-actinolite crystals.

Scale
—
0.1 mm

Crossed polarizers

A-51

J&J-0005266

Exhibit 2 - continued

Specimen 35H-223B:

In hand specimen this is a grayish black, fine-grained rock exhibiting very finely defined schistosity. A few very thin metallic seams are present that parallel the schistosity. A few subspherical, light brownish gray ~~phenocrysts~~ were noted. These may be altered garnets. A thin ~~dark seam~~ about 0.2 mm wide was noted transversing the rock. A ~~slightly~~ lighter colored zone about 5.0 mm wide was noted on either side of this seam. This zone contains many indistinctly ~~defined~~ weathered garnets.

In thin section the majority of this rock consisted of schistose biotite and chlorite laths intermixed with granulated quartz and lesser amounts of feldspar. Some larger blocky biotite grains were noted that did not follow the foliation of the rock (Photomicrograph 11). The dark seam noted in the hand specimen was a ribbon-like, first-order-grey seam exhibiting wavy extinction. It could not be definitely ascertained whether this seam was talc or highly strained quartz. The lighter colored 5.0 mm zones on either side of this seam consisted primarily of granulated quartz grains with a much lesser amount of biotite than is present in the host rock. Many euhedral to subhedral isotropic particles, presumably garnets, are concentrated in these zones. These garnets are speckled throughout with a dark opaque, very fine-grained material. In some garnets this

Exhibit 2 - continued

concentration is quite heavy. In general, less of this fine-grained opaque material was noted in these garnets than in the garnets in specimen 2H-301. This rock may be classified as a garnetiferous biotite-chlorite-quartz schist.

A-53

J&J-0005268



Photomicrograph No. 11. Specimen 35H-223B showing oriented lath like biotite (A) and oriented irregular lath like chlorite particles (B) set in a fine grained quartz matrix (lighter areas). large blocky crystals cutting schistosity are biotite.

Scale
0.1 mm

Uncrossed polarizers

Exhibit 2 - continued

Specimen 35H-223C:

In hand specimen this is a grayish black, fine-grained rock exhibiting a finely-defined schistose texture. There are some very thin, lighter colored seams throughout the rock that parallel the schistose structure.

In thin section the overall appearance of this rock was similar to 35H-223B. There were some seams showing more chlorite and biotite than in 35H-223B. In this rock there are some seams that are composed mostly of granulated quartz with very little chlorite. These are probably the thin, lighter-colored seams noted in the hand specimen. The bulk of the rock may be classified as a chlorite-biotite-quartz schist. In certain restricted areas it could be classified as a biotite-chlorite-quartz gneiss.

A-55

J&J-0005270

Exhibit 2 - continued

Specimen 35H-398:

In hand specimen this is a dark, greenish-gray fine-grained rock exhibiting a definite schistose structure. There are several variable-sized grayish black seams in the rock that parallel the schistose structure. A few carbonate eyes were noted that ranged from 0.5 to 3.0 mm.

In thin section the rock consists primarily of very fine-grained foliated-talc and chlorite particles. A few isolated, elongated platy-talc grains were noted that were subparallel to the schistosity of the rock. Chlorite was also noted concentrated in seams and as curved mineral trains around the carbonate augen in the rock. These chlorite seams generally paralleled the host rock schistosity. The overall texture of the rock is similar to specimen 6H-150 (Photomicrograph 4), but had only a minor amount of isolated carbonate particles. This rock may be classified as a talc-chlorite schist.

A-56

J&J-0005271

Exhibit 2 - continued

Specimen 35H-400:

In hand specimen this is a fine-grained, dense, grayish-black rock exhibiting a very-finely-defined schistose structure. A minor amount of small, elongated inclusions were noted that did not parallel the schistosity of ~~the host rock~~.

In thin section the rock consists **of a felty**, sublineated mass of primarily chlorite crystals with **lesser** amounts of felty sublineated talc. There are some relatively large lath-like inclusions of fine-grained talc and/or chlorite (Photomicrograph 12). These laths do not parallel the lineation of the host rock. This rock may be classified as a chlorite schist.

A-57

J&J-0005272



Photomicrograph No. 12. Specimen 35H-400 showing a large inclusion composed of fine grained talc and/or chlorite cutting foliation of host rock.

Scale
—
0.1 mm

Crossed polarizers

A-58

J&J-0005273

Exhibit 2 - continued

Specimen 36H-437:

In hand specimen this is predominantly a dark greenish gray rock exhibiting some degree of curved mineral training of dark greenish gray, dark gray and greenish gray schistose seams around some large, rather indistinct, ~~very-light~~-gray carbonate eyes ranging from 1.0 mm to 1.0 cm. A ~~rather~~ large, very-light-gray zone cuts the rock. This zone may be composed of granular carbonate particles.

In thin section a major amount of the slide was composed of an intermixture of fine-grained schistose talc and chlorite. A minor amount of elongated platy-talc grains were noted intermixed with the fine-grained schistose talc and chlorite. They tend to parallel the foliation. A moderate to major amount of carbonate was noted. The carbonate occurred as large particles and as finer-grained eyes that tend to follow the lineation of the host rock. Some thin chlorite seams were noted throughout the slide that paralleled the lineation of the host rock and occurred as curved minerals trains around the carbonate particles. This rock may be classified as an augen marble schist.

Exhibit 2 - continued

Specimen 36H-438:

In hand specimen this is a dark gray to dark greenish gray foliated rock containing some very large carbonate grains. These carbonate grains range in size from fine, granulated material concentrated in a seam about 8.0 mm wide to individual phenocrysts 2.5 to 3.0 cm in diameter. Some ~~curved~~ mineral training of the schistose phase around the carbonate grains was noted.

In thin section this slide is very similar to 36H-437. There was more foliated platy talc and more carbonate noted. This rock may be classified as a schistose augen marble.

A-60

J&J-0005275

Exhibit 2 - continued

Specimen 37H-367:

In hand specimen this is a dark greenish gray foliated rock containing a large percent of large, yellowish gray carbonate particles with relatively indistinct boundaries. Some of these particles range up to 2.0 cm in diameter.

In thin section, the rock consisted primarily of variable sized carbonate particles. A little platy talc was noted intermixed with some of the granulated carbonate zones (Photomicrograph 13A). Felty, subfoliated areas composed of fine-grained talc and/or chlorite were noted that tended to occur as curved mineral trains around the carbonate areas. Photomicrograph 13B shows an interference figure of the platy talc grain shown in Photomicrograph 13A. Talc is characterized by a 2V approaching 2°. The interference figure shows the biaxial figure of its maximum separation indicating a very low 2V. This rock may be classified as a schistose marble.



13 A



13 B

Photomicrograph No. 13A. Specimen 37H-367 showing a platy talc grain (outlined) set in a matrix of variable sized carbonate grains.

Scale

0.1 mm

Crossed polarizers

Photomicrograph No. 13B. Biaxial interference figure of platy talc grain shown in Photomicrograph 13A

Exhibit 2 - continued

Specimen 37H-388:

In hand specimen this is a foliated rock exhibiting curved mineral trains of grayish black seams and zones of schistose material around medium gray "eyes" and linear stringers of material that may be talcose.

In thin section the rock consisted ~~mostly~~ of a felty mass of fine-grained foliated talc and/or chlorite grains. The chlorite content appeared to be heavier in some areas and zones of the slide. A moderate to minor amount of ~~carbonate~~ was noted in the slide. Most carbonate occurred as granular masses that tended to subparallel the lineation of the rock. No recognizable, wholly-chlorite seams were noted in the slide. This rock may be classified as a talc-chlorite augen schist.

A-63

J&J-0005278

Exhibit 2 - continued

Specimen 37H-400:

In hand specimen the rock appears to be predominantly a medium gray, foliated rock with stringers of greenish gray material and some indistinct, light greenish gray, possibly talcose, blebs ranging up to 1.0 cm. Curved mineral ~~training~~ of the darker, schistose, seams around the lighter colored blebs is evident.

In thin section this rock appears very similar to 37H-367. As in 37H-367 some lineated platy talc was noted that paralleled the lineation of the rock. There are some relatively large, dark opaque areas disseminated throughout the slide. This rock may be classified as a talc-chlorite augen schist.

A-64

J&J-0005279

Exhibit 2 - continued

Specimen 37H-440:

In hand specimen this is predominantly a dark greenish black, foliated rock with some rather large, lighter colored, greenish gray seams up to 1.0 cm wide. These seams appear to be predominantly carbonate.

In ~~this~~ section the rock consists ~~mostly~~ of fine-grained foliated talc and/or chlorite particles ~~with a~~ fairly large percentage of intermixed, lineated platy-talc particles. These platy-talc grains tend to parallel the schistosity of the host rock. A moderate to minor amount of carbonate was noted. The carbonate occurred both as large particles showing much embayment of the fine-grained host rock and as finer-grained granulated eyes subparallel to the schistosity of the host rock. This rock may be classified as a marble schist showing a minor degree of augen structure.

A-65

J&J-0005280

Exhibit 2 - continued

Specimen 37H-450:

In hand specimen this is a foliated, predominantly greenish black rock that exhibits curved mineral training of grayish black seams around greenish gray eyes ranging from 1.0 mm to 9.0 mm.

In thin section the rock ~~consists~~ **primarily** of fine-grained talc and/or chlorite particles that ~~exhibit a~~ **foliated** texture. There are some linear platy-talc grains ~~intermixed~~ with, and following the foliated nature of the fine-grained ~~host~~ rock. Some seams of predominantly talc and some seams of predominantly chlorite were noted. A moderate amount of carbonate occurred as variable-sized eyes scattered throughout the slide. Curved mineral training of the host rock around these particles is evident. Many of the carbonate particles are fractured and eroded and many show embayments of the fine-grained talc and/or chlorite. Some platy-talc grains were noted as inclusions in the carbonate particles. The greenish-gray eyes noted in hand specimen must be the carbonate particles noted in this section. The greenish color may be due to some degree of serpentinization of the rock. This rock may be classified as an augen marble schist or, if truly serpentinized, as a verde antique.

A-66

J&J-0005281

Exhibit 2 - continued

Specimen 37H-451:

In hand specimen this rock had a very similar appearance to 37H-450.

In thin section the rock had the same general appearance as 37H-450. There was one seam noted in the rock that was filled with a ribbon-like mass of platy talc. On either side of this platy-talc seam the schistose groundmass was much denser than in the rest of the host rock (Photomicrograph 14). It could not be ascertained optically whether this zone was higher in talc or chlorite than the surrounding host rock. This rock may be classified as an augen marble schist or, if truly serpentized, possibly a verde antique.

A-67

J&J-0005282

JNJAZ55_000015269



Photomicrograph No. 14. Specimen 37H-451 showing ribbon-like platy talc seam (A) surrounded by dense zones of fine grained schistose talc and/or chlorite (B).

Scale

0.1 mm

Crossed polarizers

A-68

J&J-0005283

Exhibit 2 - continued

Specimen 37H-452:

In hand specimen this is predominantly a greenish black schistose rock in which there is some degree of curved mineral training around some greenish gray carbonate eyes ranging in size from 2.0 mm to 1.0 cm. Some thin grayish black seams are present that parallel the foliation and tend to be concentrated at the contacts between the phenocrysts and the host rock.

In thin section the host rock consists of fine-grained foliated talc and/or chlorite particles. Curved mineral training around larger carbonate particles is evident. A few elongated platy-talc laths were noted that parallel the foliation of the finer particles. The carbonate occurred as a moderate to minor amount of variable-sized particles. Most larger grains showed much embayment of the finer-grained host rock. Some granulated carbonate eyes were noted that tended to subparallel the lineation of the host rock. Some thin chlorite seams were present. These seams tended to be concentrated at the contacts of the carbonate particles and the host rock. This rock may be classified as an augen marble schist.

A-69

J&J-0005284

Exhibit 2 - continued

Specimen 37H-453:

In hand specimen this is predominantly a grayish black rock in which schistosity is finely defined. There are several variable sized seams of light bluish gray material in the rock that tend to parallel the schistosity. These seams range from 0.1 mm to 6.0 mm in width.

The thin section of this rock was too thin and much plucking out of grains was noted. What was left consisted of variable-sized carbonate particles intermixed with fine-grained lineated talc and/or chlorite particles. This rock, based upon the above data, may be classified as a verde antique.

A-70

J&J-0005285

JNJAZ55_000015272

Exhibit 2. - continued

Specimen 37H-481:

In hand specimen this is a dark grey to greenish black rock exhibiting a finely defined schistose structure. There are some indistinct light greenish gray seams in the rock ranging up to 8.0 mm wide. Some indistinct, light ~~greenish~~ gray carbonate particles are scattered throughout the rock. These carbonate particles range in size from 1.0 mm to 3.0 mm.

In thin section the rock consists of a felty, ~~sub~~foliated mass of fine grains that appear to be mainly chlorite. Some zones that appear richer in talc were noted. Some elongate platy-talc grains were noted that generally followed the foliation of the rock. A minor amount of carbonate was noted both as isolated crystals and as granulated seams subparallel to the foliation of the host rock. Very few instances were noted in which the groundmass tended to actually "mineral train" around the carbonate particles. A minor amount of dark opaques were noted as interstitial fillings and as isolated grains. This rock may be classified as a chlorite schist.

A-71

J&J-0005286

Exhibit 2 - continued

Specimen 37H-485:

In hand specimen this is a predominantly grayish black to greenish black rock exhibiting a finely defined schistose structure. Numerous light greenish gray phenocrysts, ranging from 1.0 to 2.0 mm are noted dispersed throughout the rock.

In thin section the rock had the same general appearance as 37H-481 only showing a larger number of carbonate eyes. Curved mineral training of the fine-grained host rock around these eyes was not well defined. This rock may be classified as a chloritic marble schist.

A-72

J&J-0005287

Exhibit 2 - continued

Specimen 37H-485:

In hand specimen this is a predominantly grayish black to greenish black rock exhibiting a finely defined schistose structure. Numerous light greenish gray phenocrysts, ranging from 1.0 to 2.0 mm are noted dispersed throughout the rock.

In thin section the rock had the ~~same~~ general appearance as 37H-481 only showing a larger number of ~~carbonate~~ eyes. Curved mineral training of the fine-grained host rock around these eyes was not well defined. ~~This~~ rock may be classified as a chloritic marble schist.

A-73

J&J-0005288

Exhibit 2 - continued

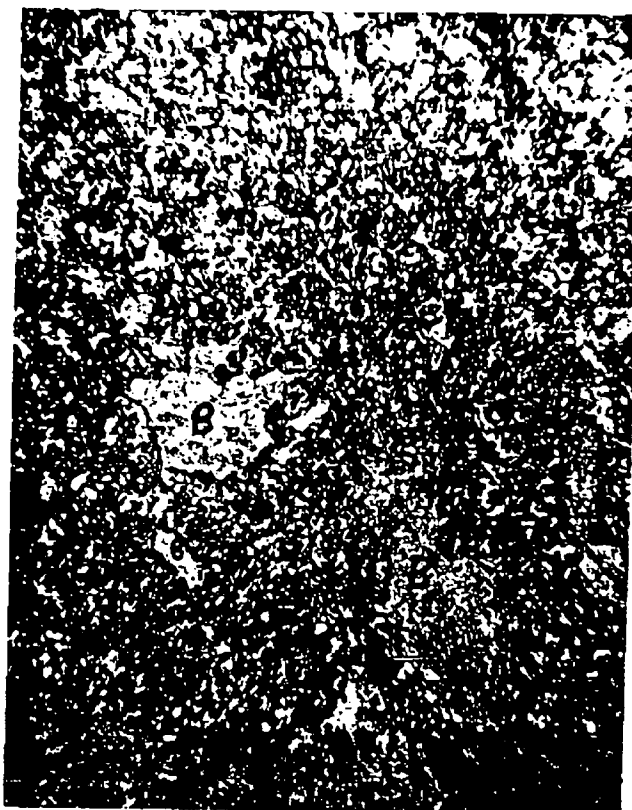
Specimen 37H-487:

In thin section this rock has the same general appearance as 37H-485. One distinct light greenish gray seam 3.0 to 8.0 mm wide is present that appears to be perpendicular to the finely defined schistose texture of the rock.

In ~~this~~ section the rock consists of a felty, subfoliated matrix of fine-grained talc and/or chlorite particles. Included in this felty groundmass are irregular inclusions composed of fine-grained talc and/or chlorite and a moderate amount of carbonate particles (Photomicrograph 15). A very minor degree of curved mineral training of the fine-grained host rock around the carbonate particles and the fine-grained talc and/or chlorite inclusions was noted. This rock may be classified as a chloritic talc marble schist cut by a vein which is predominantly talcose.

A-74

J&J-0005289



Photomicrograph No. 15. Specimen 37H-487 showing irregularly shaped particles composed of fine grained talc and/or chlorite (B) set in the felty, sub-foliated host rock matrix (A).

Scale
—
0.1 mm

Crossed polarizers

A-75

J&J-0005290

Exhibit 2 - continued

Specimen 37H-490:

In hand specimen this rock is very similar to 37H-485 except it contains many more carbonate particles. One light greenish gray seam about 3.0 mm wide cuts the rock parallel to the finely defined schistose texture.

In thin section this rock is very ~~similar~~ to 37H-487. There are a few more inclusions composed of ~~fine-grained~~ talc and/or chlorite and a few more carbonate particles. ~~The~~ 3.0 mm light greenish gray seam noted in the hand specimen analysis consists of an intermixture of fine-grained talc and chlorite (talc probably predominates) in a schistose texture. This rock may be classified as a chlorite-talc marble schist cut by a vein that is predominantly talcose.

A-76

J&J-0005291

Exhibit 2 - continued

Specimen 37H-491:

In hand specimen one-half of this rock is a dense grayish black rock containing some light greenish gray phenocrysts about 1.0 mm to 3.0 mm in diameter. Some thin light greenish gray seams that give the rock an augen type appearance were noted. The other half of the rock consists of irregular large blebs of light greenish gray carbonate shot through with thin, dark grayish black seams. These darker seams in the lighter portion of the rock are randomly oriented.

In thin section the darker portion of the rock appears very similar to 37H-490 but curved mineral training is much better defined. The lighter area consists of variable-sized carbonate particles. In this carbonate area, fine-grained gnarled seams of what appear to be predominantly chlorite with some talc occur between the carbonate grains. Gnarled and twisted seams of chlorite occur at the contact between the carbonate and the darker foliated rock. This rock may be classified as a contact zone between a chloritic marble schist and a chloritic schistose marble.

A-77

J&J-0005292

JNJAZ55_000015279

Exhibit 2 - continued

Specimen 37H-504:

In hand specimen this is a grayish black foliated rock that has a greenish gray inclusion about 8.0 mm wide and a light greenish gray carbonate eye about 1.0 cm wide. Some smaller greenish gray particles are scattered throughout the slide. There are some concentrations of thin ~~darker~~ seams along the carbonate contacts.

The thin section of this specimen ~~was unusable~~ for identification. However, based upon the hand specimen analysis, this rock may be classified as a chloritic marble schist.

A-78

J&J-0005293

Exhibit 2 - continued

Specimen 37H-512:

In thin section this is a foliated rock containing numerous irregular carbonate eyes that range in size from 1.0 mm to 1.0 cm. These carbonate eyes are surrounded by grayish black and greenish black curved mineral trains that give the ~~rock~~ an augen type of appearance.

In thin section the rock consists of ~~granulated~~ carbonate particles shot through and surrounded by fine-grained, foliated chlorite and/or talc. The fine-grained material is in curved mineral trains around the carbonate particles. Some elongated platy-talc grains were noted in the fine-grained portion of the rock in which they parallel the foliation. This rock may be classified as a schistose marble.

A-79

J&J-0005294

JNJAZ55_000015281

Exhibit 2 - continued

Specimen 38H-404:

In hand specimen this is an aphanitic, medium greenish gray, dense rock in which foliation could not be defined.

In thin section this rock has a similar appearance to the weathered basalt described in 35H-153. There was a lesser amount of dark opaque fine-grained material making the felty groundmass of tiny feldspar laths more obvious.

This rock may be classified as a basalt.

A-80

J&J-0005295

Exhibit 2 - continued

Specimen 39H-458:

In hand specimen this is predominantly grayish black foliated rock. There are a few very thin lighter colored seams in the rock that occur parallel to the foliation.

In thin section the majority of ~~the rock~~ consists of a fine-grained foliated matrix of chlorite and/or talc. There are some stringers and lineated blebs of platy talc dispersed throughout the slide. A few thin, definitely chloritic seams were noted. A minor amount of carbonate was noted as isolated crystals containing inclusions of platy talc and fine-grained talc and/or chlorite. This rock may be classified as a chlorite-talc schist.

A-81

J&J-0005296

Exhibit 2 - continued

Specimen 39H-532:

In hand specimen this rock contains greenish gray carbonate eyes surrounded by curved mineral trains of a grayish black foliated material.

In thin section this rock had the ~~same~~ general host rock appearance as 39H-458 but contained more ~~curved~~ mineral training around carbonate particles, lesser platy ~~talc~~ and more carbonate eyes. This rock may be classified as a chlorite-~~talc~~ augen marble schist.

A-82

J&J-0005297

Exhibit 2 - continued

Specimen 39H-534:

In hand specimen this rock is similar to 39H-532 except it contains more and larger eyes and stringers of greenish gray carbonate and lesser amounts of curved mineral trained grayish black schistose material.

In thin section this rock appears ~~similar~~ to 39H-532 but contains more carbonate and lesser areas of foliated fine-grained chlorite and/or talc. The carbonate ranges from extremely large grains showing embayment of the fine-grained chlorite and/or talc to granulated ~~veins~~ and eyes that parallel the foliation of the rock. This rock may be classified as a schistose augen marble.

A-83

J&J-0005298

Exhibit 2 - continued

Specimen 39H-544:

In hand specimen this rock contains a large percentage of greenish gray carbonate blebs and eyes ranging from 1.0 cm to over 2.5 cm set in a minor amount of finely defined, schistose, grayish black material.

In ~~thin~~ section this rock is very ~~similar~~ to 39H-534 except there is much more carbonate material and much less fine-grained, foliated, chlorite and/or talc. This rock may be classified as a schistose augen marble.

A-84

J&J-0005299

Exhibit 74

COLORADO SCHOOL OF MINES RESEARCH INSTITUTE

P.O. Box 112

GOLDEN, COLORADO 80401

June 30, 1971

Mr. Wm. H. Ashton
Johnson & Johnson
Research Center
Research and Development
New Brunswick, New Jersey 08901


390517

Dear Mr. Ashton:

Based upon x-ray diffraction and microscopical analyses of the Vermont finished product plant run sample, 344-L, and six monthly Vermont finished product samples only very trace amounts of tremolite-actinolite were identified.

No other forms of nontalc minerals approaching asbestos types were identified.

Sincerely,



M. G. Pattengill
Project Engineer

/laj

Exhibit 75

J&J's Internal Documentation 1957-1967

Date	Organization	Ore/Product	Type
10/15/57	Battelle Memorial	Italian Source Talc	Amphibole
5/23/58	Battelle Memorial	Italian Source Talc	Tremolite x 30
7/18/58	Battelle Memorial	Italian Source Talc	Fibrous Amphibole and Tremolite
7/31/59	Battelle Memorial	Italian Source Talc	Tremolite x 63
8/31/59	Battelle Memorial	Italian Source Talc	Tremolite
9/15/59	Battelle Memorial	Italian Source Talc	Tremolite
12/31/59	Battelle Memorial	Italian Source Talc	Tremolite x 25
3/8/60	Battelle Memorial	Italian Source Talc	Tremolite x 7
3/8/60	Battelle Memorial	Off Shelf J&J Baby Powder	Tremolite
4/12/60	Battelle Memorial	Italian Source Talc	Tremolite x 20
6/6/61	Battelle Memorial	Hammondsville, VT Talc	Altered Amphibole
10/13/61	Battelle Memorial	J&J Baby Powder Specification	Trace tremolite & amphiboles "usual contaminants"
5/27/63	Battelle Memorial	Vermont Talc	Amphibole
4/7/66	Battelle Memorial	Hammondsville, VT Talc	Serpentine, Altered amphibole
7/13/66	JJ Memorandum	1910-1920 Era Baby Powder	Tremolite
7/13/66	JJ Memorandum	1920-1930 Era Baby Powder	Tremolite
1/30/67	JJ Memorandum	Competitor Product with Italian Talc	Fibrous tremolite

J&J's Internal Documentation 1968-1972

Date	Organization	Ore/Product	Type
1/24/68	Battelle Memorial	Italian Source Talc	Tremolite
5/10/71	Colorado School of Mines	Johnson's Baby Powder	Tremolite needles
7/7/71	Colorado School of Mines	Vermont Production Samples	Tremolite/Actinolite x 6
7/9/71	Dr. Langer-Mt. Sinai	Johnson's Baby Powder	Chrysotile
7/23/71	Colorado School of Mines	Vermont Talc	Amphiboles
8/6/71	Johnson & Johnson	Italian Talc	Tremolite, Actinolite & Chrysotile
8/9/71	Johnson & Johnson	Johnson's Baby Powder	finest implicated in asbestos toxicology
9/3/71	McCrone	Johnson's Medicated Powder	Chrysotile
11/10/71	Dr. Langer-Mt. Sinai	Johnson's Baby Powder	Chrysotile
2/72	Turin Polytechnic	Italian Source Talc	Tremolite
9/8/72	Prof. Pooley-Cardiff	Italian Source Talc	Tremolite
10/27/72	McCrone	Johnson's Baby Powder "108T"	Tremolite
10/27/72	McCrone	Johnson's Baby Powder "108T"	Tremolite
1972	Johnson & Johnson	Johnson's Baby Powder	Tremolite
1972	Minnesota Space Center	Shower to Shower/ Lewin Shower/Shower	Chrysotile x 2

J&J's Internal Documentation 1973-1974

Date	Organization	Ore/Product	Type
4/19/73	Johnson & Johnson	Johnson's Baby Powder	Tremolite Fibers x 4
4/27/73	Johnson & Johnson	Johnson's Baby Powder (further analysis)	Actinolite Rods
5/16/73	Prof. Pooley - Cardiff	Vermont Source Talc	Tremolite type asbestos
6/4/73	Prof. Pooley-Cardiff	Vermont Talc	Tremolite
10/29/73	Johns Manville	Italian Source Talc	Tremolite
10/29/73	Johns Manville	Johnson's Baby Powder	Chrysotile
9/13/73	Prof. Pooley-Cardiff	Vermont Talc	Actinolite
9/13/73	Prof. Pooley-Cardiff	Italian Talc	Tremolite
12/13/73	Dutch Consumer Organization	Johnson's Baby Powder	Asbestos
1974	Pooley/Langer	Italian Source Talc	Tremolite & Possible Anthophyllite
3/1974	Dartmouth-Professor Reynolds	Vermont Source Talc	Fiberform actinolite and anthophyllite
5/14/74	Windsor Minerals/JJ	Vermont Source Talc	Chrysotile x 4
5/14/74	Windsor Minerals/JJ	Vermont Source Talc	Fibrous Anthophyllite

J&J's Internal Documentation 1974-1975

Date	Organization	Ore/Product	Type
4/4/74	Johnson & Johnson	Vermont Source Talc	Fibrous Tremolite
4/4/74	Johnson & Johnson	Vermont Source Talc	Fibrous Chrysotile
4/24/74	McCrone	Vermont-Argonaut	Chrysotile x 15
4/24/74	McCrone	Vermont-Argonaut	Asbestiform Amphibole x 15
5/9/74	McCrone	Vermont-Argonaut Ore	Chrysotile asbestos contamination
5/9/74	McCrone	Vermont-Argonaut Product	Chrysotile asbestos contamination
7/8/74	McCrone	Vermont-Weekly Samples	Chrysotile x 5
7/8/74	McCrone	Vermont-Weekly Samples	Tremolite fiber
1974	Società Talco e Grafite Val Chisone	Italian Source Talc	Chrysotile
7/1/75	McCrone	Vermont Source Talc	Asbestos x 9
11/5/75	McCrone	Vermont Source Talc	Asbestos x 13

J&J's Internal Documentation 1975-2004

Date	Organization	Ore/Product	Type
11/19/75	McCrone	Vermont Source Talc	Asbestiform Amphiboles x 2
3/1976	Rubino, et al.	Italian Source Talc	Fibers of Tremolite
9/26/84	Paoletti, et al.	Italian Talc	Tremolite Asbestos x 7
9/26/84	Paoletti, et al.	Italian Talc	Chrysotile Asbestos x 1
1/30/87	Johnson & Johnson	Vermont Floated Talc	Amphiboles
1/30/87	Johnson & Johnson	Johnson's Baby Powder	Amphiboles
3/30/87	Johnson & Johnson	Vermont Floated Talc	Amphiboles
1990	McCrone	Vermont Talc	Anthophyllite Asbestos
1991	Alice Blount, Rutgers	Johnson's Baby Powder & Vermont Talc	Tremolite Asbestos
2/10/92	Alice Blount, Rutgers	Johnson's Baby Powder & Vermont Talc	Blount reiterates Asbestos findings
10/13/95	RJ Lee Group	Johnson's Baby Powder	Tremolite
4/23/98	Alice Blount, Rutgers	Johnson's Baby Powder & Vermont Talc	Blount reiterates Asbestos findings
1/5/04	Forensic Analytical Services	Johnson's Baby Powder	Anthophyllite Asbestos

Exhibit 76

SUPERIOR COURT OF NEW JERSEY
LAW DIVISION: MIDDLESEX COUNTY
DOCKET NO. MID-1809-17AS
APPELLATE DOCKET NO. _____

DOUGLAS AND ROSLYN BARDEN,)
) TRIAL
Plaintiffs,)
)
v.) (VOLUME 1 of 2)
)
BRENNTAG NORTH AMERICA, et al.,)
)
Defendants.)
)
) MID-L-0932-17AS
DAVID CHARLES ETHERIDGE AND)
DARLENE PASTORE ETHERIDGE,)
)
Plaintiffs,)
)
v.)
)
BRENNTAG NORTH AMERICA, et al.,)
)
Defendants.)
)
) MID-L-7049-16AS
D'ANGELA MCNEILL-GEORGE,)
)
Plaintiff,)
)
v.)
)
BRENNTAG NORTH AMERICA, et al.,)
)
Defendants.)
)
) MID-L-6040-17AS
WILLIAM AND ELIZABETH RONNING,)
)
Plaintiffs,)
)
v.)
)
BRENNTAG NORTH AMERICA, et al.,)
)
Defendants.

<div>Page 2</div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> <div>9</div> <div>10</div> <div>11</div> <div>12</div> <div>13</div> <div>14</div> <div>15</div> <div>16</div> <div>17</div> <div>18</div> <div>19</div> <div>20</div> <div>21</div> <div>22</div> <div>23</div> <div>24</div> <div>25</div>	<div>Place: Middlesex County Courthouse 56 Paterson Street New Brunswick, New Jersey 08903</div> <div>Date: Wednesday, August 14, 2019 9:29 a.m. (Volume 1 of 2) (Pages 1 - 200)</div> <div>BEFORE: HON. ANA C. VISCOMI, J.S.C. and JURY</div> <div>TRANSCRIPT ORDERED BY: MOSHE MAIMON, ESQ. LEVY KONIGSBERG</div> <div>ANDREA F. NOCKS, CCR, CRR PRIORITY ONE 290 West Mount Pleasant Avenue Livingston, New Jersey 07039 (718) 983-1234 E-mail: p1steno@veritext.com</div>																																																																																							
<div>Page 3</div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> <div>9</div> <div>10</div> <div>11</div> <div>12</div> <div>13</div> <div>14</div> <div>15</div> <div>16</div> <div>17</div> <div>18</div> <div>19</div> <div>20</div> <div>21</div> <div>22</div> <div>23</div> <div>24</div> <div>25</div>	<div>APPEARANCES:</div> <div>CHRISTOPHER PLACITELLA, ESQ. COHEN, PLACITELLA & ROTH 127 Maple Avenue Red Bank, New Jersey 07701 -and- MOSHE MAIMON, ESQ. LEVY KONIGSBERG 800 3rd Avenue 11th Floor New York, New York 10022 -and- CHRIS J. PANATIER, ESQ. SIMON GREENSTONE PANATIER 1201 Elm Street Suite 3400 Dallas, Texas 75270 Attorneys for Plaintiffs, Douglas and Roslyn Barden, David Charles Etheridge and Darlene Pastore Etheridge, D'Angela McNeill-George, William and Elizabeth Ronning</div> <div>DIANE P. SULLIVAN, ESQ. JACK NOLAN, ESQ. WEIL, GOTSHAL & MANGES LLP 17 Hulfish Street Suite 201 Princeton, New Jersey 08542 Attorneys for Defendants, Johnson & Johnson, and Johnson & Johnson Consumer, Inc.</div>																																																																																							
<div>Page 4</div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> <div>9</div> <div>10</div> <div>11</div> <div>12</div> <div>13</div> <div>14</div> <div>15</div> <div>16</div> <div>17</div> <div>18</div> <div>19</div> <div>20</div> <div>21</div> <div>22</div> <div>23</div> <div>24</div> <div>25</div>	<div>INDEX</div> <div>WITNESSES CROSS REDIRECT RECROSS</div> <div>FOR THE PLAINTIFF:</div> <div>JOHN HOPKINS</div> <div>BY MS. SULLIVAN: 6</div> <div>BY MR. PANATIER: 116</div>																																																																																							
<div>Page 5</div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> <div>9</div> <div>10</div> <div>11</div> <div>12</div> <div>13</div> <div>14</div> <div>15</div> <div>16</div> <div>17</div> <div>18</div> <div>19</div> <div>20</div> <div>21</div> <div>22</div> <div>23</div> <div>24</div> <div>25</div>	<div>INDEX</div> <div>EXHIBITS</div> <div>MARKED FOR EVIDENCE</div> <table><thead><tr><th>NO.</th><th>DESCRIPTION</th><th>PAGE</th></tr></thead><tbody><tr><td>Plaintiff's</td><td></td><td>97</td></tr><tr><td>Exhibit 1056</td><td></td><td></td></tr><tr><td>Plaintiff's</td><td></td><td>232</td></tr><tr><td>Exhibit 2051</td><td></td><td></td></tr><tr><td>Plaintiff's</td><td></td><td>270</td></tr><tr><td>Exhibit 3320</td><td></td><td></td></tr><tr><td>Plaintiff's</td><td></td><td>171</td></tr><tr><td>Exhibit 3431</td><td></td><td></td></tr><tr><td>Plaintiff's</td><td></td><td>254</td></tr><tr><td>Exhibit 3695-61</td><td></td><td></td></tr><tr><td>Plaintiff's</td><td></td><td>129</td></tr><tr><td>Exhibit 6035</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>64</td></tr><tr><td>7046, Tab 18</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>91</td></tr><tr><td>7070, Tab 38</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>109</td></tr><tr><td>7834</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>25</td></tr><tr><td>8011, Tab 57</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>49</td></tr><tr><td>8012, Tab 53</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>29</td></tr><tr><td>8196, Tab 58</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>56</td></tr><tr><td>8396, Tab 297</td><td></td><td></td></tr><tr><td>Defense Exhibit</td><td></td><td>24</td></tr><tr><td>8897, Tab 56</td><td></td><td></td></tr></tbody></table>	NO.	DESCRIPTION	PAGE	Plaintiff's		97	Exhibit 1056			Plaintiff's		232	Exhibit 2051			Plaintiff's		270	Exhibit 3320			Plaintiff's		171	Exhibit 3431			Plaintiff's		254	Exhibit 3695-61			Plaintiff's		129	Exhibit 6035			Defense Exhibit		64	7046, Tab 18			Defense Exhibit		91	7070, Tab 38			Defense Exhibit		109	7834			Defense Exhibit		25	8011, Tab 57			Defense Exhibit		49	8012, Tab 53			Defense Exhibit		29	8196, Tab 58			Defense Exhibit		56	8396, Tab 297			Defense Exhibit		24	8897, Tab 56		
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<p style="text-align: right;">Page 6</p> <p>1 COURT OFFICER: Jury's entering. 2 (Jury enters.) 3 THE COURT: Good morning. 4 Please be seated. I would ask everyone to 5 make sure their cell phones, other audible devices are 6 turned off. 7 So this is the continued trial in the matter 8 of Douglas and Roslyn Barden versus Johnson & Johnson; 9 David and Darlene Etheridge versus Johnson & Johnson; 10 D'Angela McNeill versus Johnson & Johnson; and William 11 and Elizabeth Ronning versus Johnson & Johnson. 12 Today is August 14, 2019. 13 May I have appearances, please, for the 14 plaintiffs. 15 MR. MAIMON: Thank you, your Honor. Good 16 morning. 17 Moshe Maimon, Chris Panatier and Chris 18 Placitella for the Bardens, the Ronnings, the 19 Etheridges and Miss McNeill. 20 THE COURT: Thank you. 21 On behalf of the defendants, Johnson & 22 Johnson and Johnson & Johnson Consumer Incorporated. 23 MS. SULLIVAN: Good morning, your Honor. Hi, 24 everyone. Good morning. 25 Diane Sullivan and Jack Nolan for J&J.</p>	<p style="text-align: right;">Page 8</p> <p>1 Administration appeared to be satisfied, so the issue 2 was mostly put to bed. It was no longer a concern to 3 the FDA. They appeared to be satisfied. 4 Q. And did the FDA do their own testing and 5 analysis? 6 A. Amongst other activities in the 1970s, FDA 7 did extensive testing of their own. They had their 8 own laboratory do investigations. 9 Q. And our jurors have seen some of the test 10 results, but what was the FDA's conclusion on the 11 safety of J&J's talcum powder? 12 A. FDA, the results show there was no asbestos 13 on their own testing of Johnson's powders, and they 14 appeared to be satisfied there were no concerns. 15 Q. And, Dr. Hopkins, our jury's heard a 16 little bit about a citizen's petition and the FDA's 17 conclusions. 18 You were at the company at the time, sir? 19 A. I was with Johnson & Johnson, Johnson & 20 Johnson, yes, at that time, yes. 21 Q. And I'd like to show our jurors again 22 what's in evidence as 7214 A, Tab 75. 23 Doctor, this is the FDA citizen response. 24 You've seen it before, sir? 25 A. Okay.</p>
<p style="text-align: right;">Page 7</p> <p>1 MR. NOLAN: Good morning. 2 THE COURT: So, members of the jury, 3 yesterday when we left off, we were in the process of 4 concluding cross-examination testimony of Johnson & 5 Johnson's corporate representative, Dr. John Hopkins. 6 We will pick up from there. 7 Miss Sullivan. 8 MS. SULLIVAN: Thank you, your Honor. 9 J O H N H O P K I N S, previously sworn. 10 CONTINUED CROSS-EXAMINATION BY MS. SULLIVAN: 11 Q. Good morning, Dr. Hopkins. 12 A. Good morning. 13 Q. Dr. Hopkins, we left off, we were about to 14 talk about the concentration method, but I want to 15 just go back and wrap up on the FDA and the FDA's 16 involvement in the talc issue. 17 Dr. Hopkins, the jury heard about the 18 issue of what happened after the '70s in terms of 19 the back and forth with J&J and the FDA. Can you 20 talk about what was going on in the '70s and then 21 what happened after that? 22 A. Okay. Yeah. Up until late 1970s, there was 23 extensive dialogue and involvement between the top 24 manufacturers and the Food & Drug Administration, but 25 by the time of the late 1970s the Food & Drug</p>	<p style="text-align: right;">Page 9</p> <p>1 Q. Tab 75, Dr. Hopkins. 2 A. Thank you. I have it. 3 Q. And, Doctor, were you aware of this 4 conclusion by the FDA at the time you were at the 5 company? 6 A. Yes, I was. Yes. 7 Q. And, Doctor, can you talk to our jurors 8 about what a citizen's petition is and what the FDA 9 does in response? 10 A. Okay. A citizen's petition is a facility to 11 allow any citizen in the United States to write or 12 contact the Food & Drug Administration and ask them to 13 investigate any consumer product, medicinal product 14 for its safety. 15 Q. And does it trigger an FDA regulatory 16 investigation? 17 A. Yes. The FDA is compelled to respond, to 18 investigate and determine whether or not there is a 19 concern or not. 20 Q. And, Doctor, the petition was in 1983, and 21 the FDA, after a couple of years of analysis, 22 responds in, it looks like 1986? 23 A. Yes. They responded in 1986. Yes. 24 Q. And, Doctor, are you aware of whether the 25 FDA did extensive analysis and testing of talcum</p>

<p style="text-align: right;">Page 10</p> <p>1 powder in response to this petition?</p> <p>2 A. Yes. They did testing of talcum powders and</p> <p>3 they reviewed the literature and the data that they</p> <p>4 had in their own files.</p> <p>5 Q. And if we could, Doctor, just take a look,</p> <p>6 it talks about the fact that "This is a response" --</p> <p>7 this is the FDA writing, "This is a response to your</p> <p>8 November 8, '83, petition requesting that cosmetic</p> <p>9 talc be labeled with an asbestos warning statement,</p> <p>10 information on asbestos particle size and the</p> <p>11 proportion of talc impurities in the product."</p> <p>12 Now, by 1986, had Johnson & Johnson</p> <p>13 provided the FDA with testing results and samples</p> <p>14 and other information?</p> <p>15 A. By 1986, yes. The FDA had received</p> <p>16 extensive documentation from top manufacturers,</p> <p>17 including Johnson & Johnson.</p> <p>18 Q. And had the -- was the FDA aware, by 1986,</p> <p>19 that J&J had tremolite and actinolite occasionally</p> <p>20 in its talcum powder?</p> <p>21 A. Yes.</p> <p>22 Q. And, Doctor, if you go further into</p> <p>23 this -- by 1986, had FDA conducted their own</p> <p>24 analysis and testing of J&J's talcum powder or other</p> <p>25 companies' talcum powder?</p>	<p style="text-align: right;">Page 12</p> <p>1 FDA goes on to say, "We find there is no basis at</p> <p>2 this time for the agency to conclude that there is a</p> <p>3 health hazard attributed to asbestos in cosmetic</p> <p>4 talc. Without evidence of such a hazard, the agency</p> <p>5 concludes that there is no need to require a warning</p> <p>6 label on cosmetic talc."</p> <p>7 And was that the agency's conclusion in</p> <p>8 1986?</p> <p>9 A. That was the agency's conclusion in July</p> <p>10 1986, yes.</p> <p>11 Q. And that's the acting commissioner signed</p> <p>12 off on it, right?</p> <p>13 A. Yes.</p> <p>14 Q. Doctor, are you aware there are other FDA</p> <p>15 officials who did analysis and testing in the</p> <p>16 support for the petition?</p> <p>17 A. Yes. The response to the petition was many,</p> <p>18 many pages of documentation.</p> <p>19 Q. And let's look, Doctor, on page -- sorry</p> <p>20 about that -- on page 28 of the petition. I want to</p> <p>21 talk to you about, did the FDA scientists actually</p> <p>22 do an exposure analysis?</p> <p>23 A. Yes. They did a mathematical exposure</p> <p>24 analysis to look at the worst-case scenario.</p> <p>25 Q. And our jurors have heard about exposure</p>
<p style="text-align: right;">Page 11</p> <p>1 A. They had investigated pretty well all of the</p> <p>2 talcum powders on the U.S. market, including Johnson's</p> <p>3 and other competitive products.</p> <p>4 Q. And the FDA goes on to say, "Our</p> <p>5 scientists recently reviewed data from these</p> <p>6 surveillance activities and concluded that the risk</p> <p>7 from a worst-case estimate of exposure to asbestos</p> <p>8 from cosmetic talc would be less than the risk from</p> <p>9 environmental background levels of exposure to</p> <p>10 asbestos, non-occupational exposure over a</p> <p>11 lifetime."</p> <p>12 And, Doctor, what was that conclusion in</p> <p>13 certain lay terms?</p> <p>14 A. In lay terms, they were saying there was no</p> <p>15 concerns relating to talc sold on the U.S. market, and</p> <p>16 that the amount of concern was no different from what</p> <p>17 would be in the normal background.</p> <p>18 Q. In terms of worst-case scenario?</p> <p>19 A. In terms of worst-case scenario.</p> <p>20 Q. In other words, even if you assume that</p> <p>21 there is a trace amount of asbestos in talcum</p> <p>22 powder, what was the FDA's conclusion?</p> <p>23 A. That the risk was no greater than that from</p> <p>24 the environment.</p> <p>25 Q. And, Doctor, it goes on to say that, the</p>	<p style="text-align: right;">Page 13</p> <p>1 analysis, but can you explain what an exposure</p> <p>2 analysis is and what the FDA did here?</p> <p>3 THE COURT: Counsel, counsel, could I see you</p> <p>4 at sidebar.</p> <p>5 (Sidebar.)</p> <p>6 THE COURT: Foundation.</p> <p>7 MS. SULLIVAN: He was at the company.</p> <p>8 THE COURT: But for him to testify with</p> <p>9 regard to what an exposure analysis is?</p> <p>10 MS. SULLIVAN: He's a toxicologist at the</p> <p>11 company.</p> <p>12 THE COURT: Lay a foundation.</p> <p>13 MS. SULLIVAN: I'm sorry. Sure, sure, sure.</p> <p>14 (Sidebar ends.)</p> <p>15 BY MS. SULLIVAN:</p> <p>16 Q. And, Dr. Hopkins, based on your experience</p> <p>17 as a toxicologist and as a safety assessor, did you</p> <p>18 have familiarity with exposure analysis?</p> <p>19 A. Yes. It is a -- it's a means to determine</p> <p>20 what is the worst-case that can happen if you took a</p> <p>21 certain amount of something, it could be an aspirin,</p> <p>22 what would happen if you took an aspirin a day or a</p> <p>23 hundred aspirin a day, you look for the exposure</p> <p>24 analysis.</p> <p>25 Q. And, Doctor, did the FDA do an exposure</p>

<p style="text-align: right;">Page 14</p> <p>1 analysis looking at application of baby powder and 2 assuming worst-case scenario whether that that would 3 present a health hazard? 4 A. They did that, and they did a mathematical 5 calculation to determine whether or not there was a 6 potential health hazard. 7 Q. And if we look at page 28 of the citizen's 8 petition, is this one of the FDA's exposure 9 analysis? 10 A. Yes. That's comparing an infant dose, the 11 worst-case scenario, yes. 12 Q. And it's the Department of Health and 13 Human Services, FDA scientist, it looks like Gary 14 Flamm, who is the director of the office of 15 toxicological sciences, right? 16 A. He's, it appears to be the author, yes -- 17 sorry, he's not the author. He's the recipient. 18 Q. And it goes on to talk about a Linda 19 Taylor, and did you review this and do you know that 20 Linda Taylor also did some investigation as part of 21 the FDA's analysis here? 22 A. Yes. She was also part of the epidemiology 23 investigators. 24 Q. And it talked about using Linda Taylor's 25 report and other information on talc. "We conclude</p>	<p style="text-align: right;">Page 16</p> <p>1 A. Yes. 2 Q. Less than one in a hundred million in 3 terms of risk. 4 And what did the FDA, in the body of the 5 petition, FDA concluded that that was less than the 6 risk from environmental, just regular background 7 exposure? 8 A. That was the conclusion we saw a few minutes 9 ago. Yes. 10 Q. And the FDA, in this petition on page 1, 11 talks about, "In fact, there is a general consensus 12 that current talc mines are virtually free of 13 asbestos, offending mines have gradually been 14 abandoned, and that any residual silicates in talc 15 are so finely and smoothly ground as to represent 16 virtually no risk to humans whatsoever, even where 17 an occasion fiber just barely satisfies the 18 technical definition of asbestiform." 19 Do you see that? 20 A. That is their conclusion, yes. 21 Q. And then there is also an analysis by 22 Linda Taylor in the back here, and she talks about 23 her exposure analysis, right, on page 75. 24 Do you have it, Doctor? 25 A. Yes. She's the author.</p>
<p style="text-align: right;">Page 15</p> <p>1 that the added human risk of lung cancer and 2 mesothelioma from possible asbestos in talc is less 3 than ten to the eighth lifetime risk and quite 4 possibly orders of magnitude less. 5 "We have used, as our population at risk, 6 infants that may be routinely dusted with talcum 7 powder for an estimated period of two years." 8 And, Doctor, ten to the eighth, is that -- 9 what's the math on that? Is that ten to the eighth, 10 I think -- 11 A. Is it 100 millionth, yes. 12 Q. So it would be like -- 13 A. Less than one in a hundred million. 14 Q. It would be 0.11 -- 00 -- if you do -- 15 yeah, so it's less than 100th millionth of a percent 16 risk, right? 17 A. It's less than one in a hundred million. 18 Q. I'm sorry, Mr. Nolan is telling me add one 19 more zero. 20 A. Yes. 21 Q. It's less than 100 millionth of a percent? 22 A. It doesn't say percent. At least on this 23 one it doesn't. It's less than one in a hundred 24 million. 25 Q. Less than one in a hundred million?</p>	<p style="text-align: right;">Page 17</p> <p>1 Q. And also, she's also an FDA official? 2 A. She's employed by the Food & Drug 3 Administration, yes. 4 Q. And she talks about, she does an exposure 5 analysis where she assumed a one percent, right? 6 Just take a look here, go back to the 7 other -- if we go back to page 32, the analysis we 8 looked at first, it says, "These estimates of added 9 lifetime human cancer risk are two orders of 10 magnitude below those implied in Linda Taylor's memo 11 due to the fact that the more recent detection 12 studies suggest one-tenth of one percent or less 13 asbestos in talc on average rather than the one 14 percent assumed by Dr. Taylor and due to her 15 conversion error"; right? 16 A. Yes. 17 Q. And so can you tell our jurors what that's 18 about? 19 A. A mathematical evaluation was conducted 20 assuming that at worst-case it was one percent, 21 although in reality they got the math wrong, it should 22 have been .1 percent. 23 But based on that conclusion, the author, 24 Linda Taylor, concluded that there was no measurable 25 risk.</p>

<p style="text-align: right;">Page 18</p> <p>1 Q. So Dr. Taylor says when she assumed one 2 percent, and our jurors have heard Dr. Longo's 3 calculations of trace 17 millionths of a percent, 4 nine-thousandths of a percent, so well less than one 5 percent in terms of the allegations of what's been 6 found, right? 7 A. Yes. 8 MR. PANATIER: Leading. 9 THE COURT: Objection sustained. Please 10 rephrase. 11 BY MS. SULLIVAN: 12 Q. Dr. Hopkins, you're aware of the 13 allegations against the company and the allegations 14 of the levels of asbestos found? 15 MR. PANATIER: Still leading. 16 THE COURT: Please rephrase. 17 BY MS. SULLIVAN: 18 Q. Doctor, are you aware of the levels of 19 asbestos that Dr. Longo, plaintiffs' expert, claimed 20 to find? 21 MR. PANATIER: And, your Honor, this is 22 outside the scope. 23 THE COURT: Sidebar. 24 (Sidebar.) 25 THE COURT: You can't convert him to an</p>	<p style="text-align: right;">Page 20</p> <p>1 about that Linda Taylor, talks about Linda Taylor's 2 analysis and that her assumption, does it say 3 whether her assumption was in error about the one 4 percent? 5 A. Yes. Earlier on in that report it said that 6 she should have used a calculation of 0.1 percent. 7 Q. And it talks about the detection study 8 suggesting a tenth of a percent or less? 9 A. That is what the report suggests, she should 10 have used that calculation, yes. 11 Q. And the FDA -- what was the FDA's final 12 conclusion based on exposure analysis as to whether 13 or not, even if you assume worst-case scenario that 14 there was asbestos in talcum powder, how would it 15 compare to just regular air, background air? 16 A. Their conclusion was that the risk was 17 infinitesimally small and it's no different from the 18 background risk. 19 Q. Ten to the eighth, which you told us was 20 one -- 21 A. 100 million, one in a hundred million. 22 Q. Thank you, Doctor. 23 A. Ten to the minus eight. 24 Q. I want to switch gears and talk to -- did 25 the FDA -- Doctor, did the FDA's analysis and</p>
<p style="text-align: right;">Page 19</p> <p>1 expert just because it's part of your direct. 2 MS. SULLIVAN: It's just math, your Honor. 3 THE COURT: No. I'm not going to allow it. 4 Thank you. 5 (Sidebar ends.) 6 THE COURT: Objection is sustained. Let's 7 move on. 8 BY MS. SULLIVAN: 9 Q. And, Doctor, Dr. Hopkins, so Linda Taylor 10 assumed one percent -- 11 A. She did. 12 Q. -- of asbestos as worst-case scenario, and 13 said it would be 100 to 200 times greater than 14 background, and she wasn't sure what the risk was 15 from that exposure, right? 16 And then we saw that -- 17 THE COURT: Counsel, where's the question? 18 MS. SULLIVAN: I'm going to ask it -- 19 BY MS. SULLIVAN: 20 Q. So that's what she says, right, 21 Dr. Hopkins? 22 A. Yes. She's concluding that essentially even 23 if you go with the worst-case of one percent, she's 24 saying that there's no measurable risk. 25 Q. And then the subsequent evaluation talks</p>	<p style="text-align: right;">Page 21</p> <p>1 citizen's petition put this issue to bed from the 2 FDA's standpoint in terms of the safety of talc? 3 MR. PANATIER: Objection, your Honor. 4 Speculation. 5 THE COURT: Sustained. 6 BY MS. SULLIVAN: 7 Q. Did Johnson & Johnson hear anything 8 further after the FDA's own investigation and 9 analysis while you were at the company? 10 A. There were no further demands from the Food 11 & Drug Administration certainly at that time, no. 12 Q. I want to switch gears, Doctor, and talk 13 about the concentration method. 14 And I think you told us and I think our 15 jurors have seen that J&J actually tried to -- did 16 J&J try to make the concentration method work? 17 A. Yes. The company commissioned several 18 outside experts to look at the possibility of a 19 concentration method from the very early 1970s. 20 Q. And what were the results of those 21 efforts, Doctor? 22 A. None of the people who were working on that, 23 including FDA, who were not commissioned by J&J, came 24 up with a method that was considered to be valid in 25 terms of identifying asbestos or other materials at</p>

<p style="text-align: right;">Page 22</p> <p>1 very low levels.</p> <p>2 Q. Were there issues, Dr. Hopkins, with the</p> <p>3 method being able to detect certain kinds of</p> <p>4 asbestos?</p> <p>5 A. Yes. The liquid density concentration</p> <p>6 method, Professor Pooley remarked that you could not</p> <p>7 use that to detect chrysotile, which is one of the</p> <p>8 more important unpleasant parts of asbestos.</p> <p>9 Q. And I want to show you a document that our</p> <p>10 jurors have seen, this is Plaintiffs' Exhibit 1096</p> <p>11 in evidence, Tab 55.</p> <p>12 And, Doctor, this is a document in the</p> <p>13 early '70s, J&J, and it talks about Dr. Pooley doing</p> <p>14 some work?</p> <p>15 A. Yes. It does.</p> <p>16 Q. And it actually talks about concentration,</p> <p>17 right?</p> <p>18 A. Yes.</p> <p>19 Q. And it says they find no asbestos, quotes</p> <p>20 around asbestos, by doing this with Italian talc,</p> <p>21 right?</p> <p>22 A. It does.</p> <p>23 Q. And they find Pooley .05 percent of a</p> <p>24 tremolite type in Vermont, right?</p> <p>25 A. Yes.</p>	<p style="text-align: right;">Page 24</p> <p>1 can you tell us what that conclusion is?</p> <p>2 MR. PANATIER: Calls for speculation, your</p> <p>3 Honor.</p> <p>4 THE COURT: Sustained.</p> <p>5 BY MS. SULLIVAN:</p> <p>6 Q. You're the corporate rep. How did the</p> <p>7 company interpret that conclusion, Dr. Hopkins?</p> <p>8 MR. PANATIER: There's no foundation for</p> <p>9 that.</p> <p>10 THE COURT: Sustained.</p> <p>11 BY MS. SULLIVAN:</p> <p>12 Q. Dr. Hopkins, based on your review and</p> <p>13 analysis, is there an issue with a test being too</p> <p>14 sensitive? You can answer, I think.</p> <p>15 A. Jump up.</p> <p>16 There is a concern if you mistakenly find</p> <p>17 something that is not asbestos. When you are dealing</p> <p>18 with highly sensitive testing, you can mistakenly find</p> <p>19 materials that would not reflect reality.</p> <p>20 Q. And, Doctor, I want to show you what's</p> <p>21 been marked as Defense Exhibit 8897, T 56, and move</p> <p>22 it into evidence.</p> <p>23 MR. PANATIER: No objection.</p> <p>24 THE COURT: Admitted.</p> <p>25 (Defense Exhibit 8897, Tab 56, was moved into</p>
<p style="text-align: right;">Page 23</p> <p>1 Q. Is that referring to asbestos?</p> <p>2 MR. PANATIER: Calls for speculation, your</p> <p>3 Honor.</p> <p>4 THE COURT: Sustained. Don't answer.</p> <p>5 BY MS. SULLIVAN:</p> <p>6 Q. Does that say asbestos?</p> <p>7 A. It does not say asbestos.</p> <p>8 MR. PANATIER: Your Honor, can we read where</p> <p>9 the word "asbestos" appears, please?</p> <p>10 MS. SULLIVAN: I read it. It's in quotes.</p> <p>11 THE COURT: Okay. Let's not have that</p> <p>12 discussion out there.</p> <p>13 Please read it as written.</p> <p>14 BY MS. SULLIVAN:</p> <p>15 Q. And, Doctor, if we turn to page 1896 --</p> <p>16 A. Yes.</p> <p>17 Q. -- it talks about Dr. Pooley developing</p> <p>18 techniques for pre-concentration of chrysotile and</p> <p>19 tremolite, right?</p> <p>20 A. Yes. He was commissioned to see if he could</p> <p>21 make that method work.</p> <p>22 Q. And then it says that the tremolite type</p> <p>23 is found, and the limitation is that it may be too</p> <p>24 sensitive.</p> <p>25 Having investigated these test results,</p>	<p style="text-align: right;">Page 25</p> <p>1 evidence.)</p> <p>2 BY MS. SULLIVAN:</p> <p>3 Q. And, Doctor, Tab 56, this is -- and this</p> <p>4 is to Dr. -- this is actually to Dr. Pooley -- I'm</p> <p>5 sorry, to Dr. Pooley from J&J, and is J&J actually</p> <p>6 sending Dr. Pooley samples to test with the</p> <p>7 concentration method?</p> <p>8 A. Yes. It's a cover letter to say in June</p> <p>9 1973, we are sending you samples for evaluation.</p> <p>10 Q. And, Doctor, are you aware of Dr. Pooley's</p> <p>11 test results trying the concentration method, did he</p> <p>12 ever find asbestos in J&J's talc?</p> <p>13 A. He did not.</p> <p>14 Q. And if we look to T -- Defense Exhibit</p> <p>15 8011, Tab 57, and I'd like to move this into</p> <p>16 evidence, Defense Exhibit 8011.</p> <p>17 MR. PANATIER: I have no objection. I think</p> <p>18 it may already be in evidence, for the record, but I</p> <p>19 have no objection.</p> <p>20 THE COURT: Admitted.</p> <p>21 (Defense Exhibit 8011, Tab 57, was moved into</p> <p>22 evidence.)</p> <p>23 BY MS. SULLIVAN:</p> <p>24 Q. Doctor, this is some more work by</p> <p>25 Dr. Pooley?</p>

<p style="text-align: right;">Page 26</p> <p>1 A. Yes, it is. It's a report of his research. 2 Q. And our jurors have heard about 3 Dr. Pooley. 4 He was the independent expert in the UK? 5 A. Yes. He's a geologist. 6 Q. And Dr. Pooley talks about some testing 7 here and he says, "A large number of fibrous 8 particles in both powders have been analyzed with no 9 positive identification of an amphibole or 10 chrysotile particle. It is estimated that this type 11 of analysis can readily be applied to a relatively 12 large and statistically significant number of 13 fibrous particles to confirm the presence of and 14 quantity -- and quantify the asbestos content of 15 talcum powder. 16 "This examination technique has been 17 applied to a sample of talc containing 30 percent 18 tremolite by weight, which every fiber was confirmed 19 as being amphibole." 20 And then it goes on to say, Doctor, that 21 "the examination of several hundred particles in 22 Vermont and Italy has so far proved negative." 23 So what was Dr. Pooley's conclusion, based 24 on his analysis of Johnson & Johnson's talcum 25 powder?</p>	<p style="text-align: right;">Page 28</p> <p>1 actually tried it, right? 2 A. Yes. He developed a method and evaluated 3 products by that method. 4 Q. And it looks like he actually adds a 5 contaminant to test the method, right? I'm sorry, 6 does he actually add asbestos and try to test it? 7 A. Yes. He uses a rare form of asbestos called 8 crocidolite which -- 9 Q. And then going to his conclusions here, he 10 goes on to say that "tests have also been run upon 11 the contaminated powder," that's referencing the 12 spiked sample, I take it? 13 A. Well, the contaminated powder, he added two 14 percent crocidolite by weight, contaminated talc 15 powder, so... 16 Q. And it goes on to say, "The tests have 17 proven to be unsatisfactory and a comparison of the 18 two procedures is likely to show that heavy liquid 19 separation is a very inaccurate and unsuitable 20 technique to adopt." 21 A. That was his conclusion. 22 Q. So did Dr. Pooley try to make it work, and 23 what was his conclusion about this heavy liquid 24 concentration method? 25 A. His conclusion was that it's inaccurate and</p>
<p style="text-align: right;">Page 27</p> <p>1 A. He was saying that where he had a positive 2 sample that contained 30 percent tremolite, he could 3 find it, but when he looked at the Johnson talc from 4 Vermont and Italy he could find nothing. 5 Q. In other words, he did a comparison -- 6 A. He did a comparison with something that had 7 30 percent tremolite and found it, but when he looked 8 at the powder from Vermont and from Italy he could not 9 find anything. 10 Q. And did Dr. Pooley, can you tell our 11 jurors, did Dr. Pooley do a fair amount of testing 12 for J&J over the years? 13 A. He did. Yes. He was one of the very few 14 experts that have the skill set to understand the 15 analysis. 16 Q. And did Dr. Pooley ever find asbestos in 17 Johnson & Johnson's finished product? 18 A. No. 19 Q. And if we look, Dr. Hopkins, to page 8 of 20 the same document, on the PDF page 8, page 9, it 21 talks more about the concentration that Dr. Pooley 22 was trying to make work, right? 23 A. It does. It describes the procedure he was 24 using. 25 Q. And it talks about the fact that he's</p>	<p style="text-align: right;">Page 29</p> <p>1 unsuitable technique. 2 Q. And then I want to show you Defense 3 Exhibit 8196, Dr. Hopkins, Tab 58. I believe this 4 is in evidence as a Plaintiffs' Exhibit, but if not, 5 Defense Exhibit 8196, we'd like to move it in. 6 MR. PANATIER: I don't have an objection, 7 your Honor. 8 THE COURT: Admitted. 9 (Defense Exhibit 8196, Tab 58, was moved into 10 evidence.) 11 BY MS. SULLIVAN: 12 Q. Dr. Hopkins, did J&J also have another 13 outside consultant, Colorado School of Mines also 14 tried the concentration method and tested J&J 15 product with this concentration method? 16 A. Yes. Colorado School of Mines, they worked 17 for about three years on that project. 18 Q. And what they say is that they're trying 19 to examine with the purpose of identifying all 20 minerals present, even those at levels of a few 21 parts per million, right? 22 A. That was the challenge they were given, yes. 23 Q. And they used a heavy liquid separation, 24 right? 25 A. Yes. They did. Yes.</p>

<p style="text-align: right;">Page 30</p> <p>1 Q. And can you tell our jurors, having run 2 samples through the heavy liquid density separation, 3 did the Colorado School of Mines find asbestos in 4 Johnson & Johnson's talcum powder? 5 A. They did not report finding asbestos. 6 Q. And they say, "Amphibole was not 7 conclusively identified in the sample," right? 8 A. Yes. 9 Q. And it talks about that what they're 10 seeing showed only talc, right? 11 A. Yeah. They describe what they could 12 visualize under the microscope, and they examined 13 those particles specifically. 14 Q. And, Doctor, do you know whether the FDA 15 tried to make the concentration method work? 16 A. FDA tried their own version of a 17 concentration method, yes. 18 Q. And we'll look at some documents. In 19 other words, the FDA had their own scientists try to 20 see if the concentration method was a good way to 21 test talc? 22 A. Yes. They used a different protocol, but 23 they spent about a year and a half on that program. 24 Q. And what did the FDA conclude? 25 A. Again, they concluded that it did not</p>	<p style="text-align: right;">Page 32</p> <p>1 Were you familiar with that effort? 2 A. Yeah. That was a little research project 3 conducted by the mining operation. 4 Q. And I want to -- I want to go back to a 5 document that our jurors have seen and ask you some 6 questions about it, if I could, Doctor, and it is 7 Defense Exhibit 7089. It is Tab 69 in your binder. 8 A. Yes. 9 Q. And, Doctor, can you -- our jurors have 10 seen this. Can you explain, first of all, it says 11 confidential. Could you tell our jurors why 12 something like this would be confidential? 13 A. Yeah. If you are working on a secret 14 project you just mark it confidential, because very 15 often projects can have value commercially for a 16 patent. So if you can create a patent around a 17 project you can then have commercial value which you 18 can sell to a competitor or to someone else. 19 Q. For a patent, you said? 20 A. For a patent, yes. Patents are often sold, 21 particularly in the electronics industry, patents are 22 sold between companies. 23 Q. And can you tell our jurors what's going 24 on, what this plant trial is about? 25 A. It's to look at, I think I said yesterday</p>
<p style="text-align: right;">Page 31</p> <p>1 function as a means to concentrate the minerals. 2 Q. Doctor, our jurors have seen some 3 documents about Project 101. Can you tell us what 4 Project 101 was? 5 A. Yes. It was in the late '60s, early '70s, 6 there was an intention to look for alternative talc 7 sources here in the United States, recognizing that 8 the deposit in Vermont, the Hammondsville mine had a 9 finite life. It was estimated to be about 25 years, 10 20 to 25 years. So to look for an alternative source 11 of talc. And something like 50 different talc 12 deposits in mines were evaluated in the various states 13 in the U.S. including California, Montana, Alabama, 14 Carolinas, for, as an opportunity to make cosmetic 15 talc. 16 Q. And so was J&J exploring various other 17 mines and trying to figure out what minerals could 18 be there or not? 19 A. Yes. Yeah. You look for a mine, but of 20 course, or you look for a deposit, but you also have 21 to make sure it meets your requirements. 22 Q. And, Doctor, our jurors have heard about 23 froth flotation testing and J&J spiking samples to 24 see whether they can come up with a method to remove 25 any minerals chemically.</p>	<p style="text-align: right;">Page 33</p> <p>1 that typically when you're floating the talc and 2 washing it you use a material that looks very similar 3 to dish wash liquid. But the idea was to, and that's 4 what was being used. If you could use other materials 5 could they get a better quality of talc and could, in 6 theory, question, could you remove things that you 7 didn't want. 8 So they were looking at butanol and butanol 9 citric acid, two other types of chemical, as a means 10 to clean up the talc and get even better quality talc. 11 Q. And can you tell us whether these 12 experiments were started in response to the press 13 the Lewis (sic) and Langer reports? 14 MR. PANATIER: Your Honor, this is 15 speculation. 16 THE COURT: Objection sustained. 17 BY MS. SULLIVAN: 18 Q. Based on the dates, Doctor, and the dates 19 of some of this activity, do you know whether this 20 was started after the reports in the press by 21 Dr. Lewis and Langer? 22 MR. PANATIER: Lack of foundation. 23 THE COURT: Sustained. 24 BY MS. SULLIVAN: 25 Q. Dr. Hopkins, do you have an understanding,</p>

<p style="text-align: right;">Page 34</p> <p>1 based on your experience and review of documents, 2 about the timing of when these products, when these 3 projects were started? 4 A. The timing of the projects was in the early 5 1970s, which was after the discussions in the 6 literature from Lewin and Langer. 7 Q. And it talks about, is this a research 8 project, Doctor, plant trial? 9 A. Yes. 10 Q. And it talks about some testing on product 11 samples, right, by, looks like a scientist from 12 Dartmouth on page 4? 13 A. Yes. Yes. Several people were involved. 14 Q. And Dr. Reynolds at Dartmouth, it looks 15 like he tested some amphiboles, and it also looks 16 like he tested finished product, looking at page 5 17 on top? 18 A. Yes. He tested finished product. 19 Q. And what did Dr. -- what did Dr. Reynolds 20 from Dartmouth conclude about the finished product 21 and whether or not they had asbestos? 22 A. Sorry, I've lost my place. 23 Q. I'm sorry. It's on the top of page 5, Dr. 24 Hopkins. 25 A. I'm sorry. I was reading it.</p>	<p style="text-align: right;">Page 36</p> <p>1 Q. And what does that mean, based on your 2 understanding and experience on the issue whether 3 they found asbestos in the finished product? 4 A. The amphiboles did not meet the definition 5 of asbestos. 6 Q. And then it looks like Mr. Zeitz here is 7 talking about the fact that they're doing this 8 experiment because of the potential of asbestos 9 being in talc? 10 A. That was his rationale, yes. 11 Q. And if we look at -- Doctor, are you aware 12 whether, in doing this test, J&J scientists actually 13 put asbestos into the talc to test these chemical 14 reagents? 15 A. There is a test report where talc was 16 deliberately contaminated with asbestos materials to 17 see if you could find it and remove it. 18 Q. Doctor, if we look at page 38 of this 19 research report, page 38 of the PDF. 20 A. I have that. 21 Q. Yes. Does it talk about these experiments 22 and the fact that the J&J scientists were actually 23 adding asbestos into the talcum powder before they 24 tested these reagents? 25 A. Yeah. The sentence says, "Ground ore from</p>
<p style="text-align: right;">Page 35</p> <p>1 What they concluded was that the analysis of 2 finished products indicates reduction in chlorite 3 content attributable to the alcohol systems, and they 4 concluded that the detected, excuse me, detected 5 amphibole minerals did not appear to be fibrous form 6 in any of the product samples. 7 Q. What does that mean? 8 MR. PANATIER: Objection. Can we just clear 9 up on the next page, this is Vernon Zeitz, this isn't 10 Dartmouth. 11 A. The author is Mr. Zeitz, yes. 12 Q. The author is Mr. Zeitz, but he is 13 reporting, is he not reporting, Dr. Hopkins, on the 14 Dartmouth results? 15 A. The previous paragraph which I was reading 16 through was a summary of the report from Dartmouth 17 College. 18 Q. And what does the summary of the report 19 from the Dartmouth testing say about what Dartmouth 20 found on the finished samples about whether they 21 found asbestos in the finished product? 22 A. The author, Mr. Zeitz, is summarizing, he 23 said that the detected amphibole minerals did not 24 appear in a fibrous form in any of the product 25 samples.</p>	<p style="text-align: right;">Page 37</p> <p>1 the Hammondsville mine was doped with one percent by 2 weight of the fibrous form of anthophyllite." 3 Q. So they're spiking the samples with 4 asbestos to test this? 5 A. Yes. Well, with anthophyllite, yes. 6 Q. And, Doctor, there's also a chart in this 7 that the plaintiffs' lawyers have shown our jurors 8 on page 36, talking about chrysotile? 9 A. Yes. 10 Q. And are you aware of whether, based on 11 other information and documents, these are spiked 12 samples? 13 A. The understanding is that they are spiked 14 samples. 15 Q. And if -- 16 MR. PANATIER: Your Honor, there's no 17 foundation for that. 18 THE COURT: Sustained. 19 BY MS. SULLIVAN: 20 Q. If we could look at Defense Exhibit 7085, 21 I believe it's in evidence. That's Tab 96. 22 In this research project, Dr. Hopkins, are 23 they spiking samples to test the reagents? 24 A. Let me get to the page first. 25 THE COURT: What was that exhibit, counsel?</p>

<p style="text-align: right;">Page 38</p> <p>1 MS. SULLIVAN: I'm sorry?</p> <p>2 THE COURT: What was that Tab Number?</p> <p>3 MR. PANATIER: 96.</p> <p>4 THE COURT: Thank you.</p> <p>5 BY MS. SULLIVAN:</p> <p>6 Q. Doctor, is this going back to the plant</p> <p>7 trial?</p> <p>8 A. It's the same date. I'm checking the dates.</p> <p>9 Q. Yeah.</p> <p>10 A. I want to make sure we're all on the same</p> <p>11 page here.</p> <p>12 Q. Yeah.</p> <p>13 A. Yes, that's the same time. That's the same</p> <p>14 wet washing agent, it's butanol citric acid.</p> <p>15 Q. And so looking at this March 1974</p> <p>16 document, it kind of gives, does it give an overview</p> <p>17 of the research project that had been conducted in</p> <p>18 the prior months?</p> <p>19 A. It does.</p> <p>20 Q. January?</p> <p>21 A. It's the same description where they are</p> <p>22 washing the product with citric acid or butanol citric</p> <p>23 acid as washing agents.</p> <p>24 Q. The same reagent we saw in the plant trial</p> <p>25 from January, right?</p>	<p style="text-align: right;">Page 40</p> <p>1 two epidemiology studies?</p> <p>2 A. Yes. He is a well recognized</p> <p>3 epidemiologist.</p> <p>4 Q. And the first -- he did it on the Italian</p> <p>5 mines?</p> <p>6 A. He did. Yes.</p> <p>7 Q. And our jurors have heard that the first</p> <p>8 one was funded by J&J.</p> <p>9 Was the second one funded by J&J?</p> <p>10 A. No. It was not.</p> <p>11 Q. And I want to show you the draft, the pre</p> <p>12 publication draft from the second study that J&J, it</p> <p>13 looks like got as a courtesy, and ask you some</p> <p>14 questions about it.</p> <p>15 This is Plaintiffs' Exhibit 2675, and it's</p> <p>16 at your Tab 283, Doctor.</p> <p>17 And this is a pre publication draft,</p> <p>18 right?</p> <p>19 MR. PANATIER: Your Honor, my objection is</p> <p>20 this was covered in quite a bit of length on the 25th.</p> <p>21 THE COURT: Sidebar.</p> <p>22 MS. SULLIVAN: I didn't finish.</p> <p>23 THE COURT: Sidebar.</p> <p>24 (Sidebar.)</p> <p>25 MS. SULLIVAN: Your Honor, I had abbreviated</p>
<p style="text-align: right;">Page 39</p> <p>1 A. Yes. Of the same year, yes.</p> <p>2 Q. And it's kind of reviewing -- and does it</p> <p>3 talk about, on page 2, chrysotile being doped into</p> <p>4 the talc on page --</p> <p>5 A. Yeah. It describes chrysotile, what</p> <p>6 chrysotile is, and it describes the experiment. Yeah.</p> <p>7 It describes what chrysotile is and it goes on to see</p> <p>8 if you can remove it.</p> <p>9 Q. And it talks about it being doped into the</p> <p>10 talc, right?</p> <p>11 A. Yes.</p> <p>12 Q. And going back to page 36, we see</p> <p>13 chrysotile here, right?</p> <p>14 A. Yes. We do.</p> <p>15 Q. As part of the doping experiment?</p> <p>16 A. Yes.</p> <p>17 Q. And, Doctor, I want to talk to you about,</p> <p>18 go back briefly to the Rubino.</p> <p>19 You are familiar with the epidemiology</p> <p>20 studies and you were actually asked some questions</p> <p>21 about a draft publication, right?</p> <p>22 A. Yes.</p> <p>23 Q. I want to go back to that briefly.</p> <p>24 And Dr. Rubino, I think our jury has</p> <p>25 heard, was a scientist and epidemiologist who did</p>	<p style="text-align: right;">Page 41</p> <p>1 time with Dr. Hopkins. I talked to him about the first</p> <p>2 publication and what was published. Now I want to talk</p> <p>3 to him about what's in his pre publication and compare</p> <p>4 it to the same.</p> <p>5 MR. PANATIER: That's exactly what counsel</p> <p>6 did. She took, I remember she took the cancers, the</p> <p>7 excess cancers reported here and she related them back</p> <p>8 and showed that they were, at least according to them,</p> <p>9 that they were published. And that was the very first</p> <p>10 thing --</p> <p>11 MS. SULLIVAN: Two different papers.</p> <p>12 THE COURT: Wait. Stop that.</p> <p>13 MR. PANATIER: It was this document.</p> <p>14 MS. SULLIVAN: Two different papers.</p> <p>15 THE COURT: Okay. Can you show me that?</p> <p>16 MR. PANATIER: Yeah, of course.</p> <p>17 MS. SULLIVAN: This is a different</p> <p>18 question --</p> <p>19 THE COURT: He's not here right now.</p> <p>20 MR. PANATIER: Let me just bring it up real</p> <p>21 fast. I think it was in the morning.</p> <p>22 THE COURT: Where's the reference to it being</p> <p>23 in the same paper?</p> <p>24 MR. PANATIER: So they have the pre</p> <p>25 publication version right now, the draft, this</p>

<p style="text-align: right;">Page 42</p> <p>1 manuscript is intended for. And then we can go to the 2 part where they talk about the cancers. 3 THE COURT: So the witness has just testified 4 that they were provided a draft of the second as a 5 courtesy. 6 MR. PANATIER: In fact, see, so here's where 7 they're talking about the different cancers, the 8 esophageal cancer which is reported right there. So 9 they're going through individual cancers -- 10 THE COURT: This was already covered. 11 MS. SULLIVAN: No, your Honor. This is what 12 I want to show. It wasn't covered. The whole process 13 wasn't the same in the final paper and that things were 14 not reported because they were related to alcohol. 15 That was not covered. 16 MR. PANATIER: That's fine. 17 MS. SULLIVAN: I had three hours -- 18 THE COURT: Go. Go ahead with those two 19 questions. 20 MS. SULLIVAN: Thank you. 21 THE COURT: All right. 22 (Sidebar ends.) 23 BY MS. SULLIVAN: 24 Q. Okay. Doctor, going back -- so if we go 25 to page, looks like Bates Number 7070, Doctor, on</p>	<p style="text-align: right;">Page 44</p> <p>1 page 64, Doctor, and he talks about "when the total 2 occurrence of these neoplasms" -- and that's cancer, 3 right? 4 A. Yeah. Neoplasm relates to cancer. 5 Q. -- "was splitted by site, there was no 6 evidence of any significant increase of specific 7 site tumors." Right? 8 A. Yes. 9 Q. And, but then he talks about "in 10 non-malignant diseases, there was an excess of 11 deaths from alcohol-related issues." Right? 12 A. Yeah. Yes. 13 Q. And if we look at this chart, on page, 14 plaintiffs showed you on page 89, it talks about 15 deaths from all causes, right? 16 A. Let me get there. 17 Q. Sure. 18 A. Yes. It summarizes deaths from all 19 malignant causes. 20 Q. And if we look at the final paper, Defense 21 9382, Tab 284, which you were shown, are all -- in 22 Rubino's final paper, are all the deaths reported 23 the same? 24 A. Yes. 25 Q. 560?</p>
<p style="text-align: right;">Page 43</p> <p>1 the discussion of this Rubino report. 2 And Dr. Rubino reports his findings, 3 right, on the Italian mine? 4 A. I think we've got the wrong thing. What 5 Bates number? 6 Q. If you look at the Bates Number is 9070, 7 and it's Tab -- 8 A. I've got it. 9 Q. Great. 10 And he talks about his findings here. 11 "These additional findings support the hypothesis 12 that lung cancer is unrelated to exposure to this 13 non-asbestiform talc. The excess of esophageal 14 cancer in both miners and millers which also have 15 shown a significant increase of cirrhosis of the 16 liver suggest that both diseases might have a common 17 cause in excessive alcohol consumption. These 18 habits were phenomenal already assessed before 19 starting the investigation on mortality." 20 And then it goes on to say, "No data 21 suggestive of a relationship between cancer of other 22 sites and talc exposure were obtained." 23 Right? 24 A. Yeah. That was his summary. 25 Q. And if we look at page, he also goes on on</p>	<p style="text-align: right;">Page 45</p> <p>1 A. They observed 560. 2 Q. 560? 3 A. Expected 446. 4 Q. 4469 -- 5 A. So they're in both reports. 6 Q. -- 4469, 125, 193, 164, all the 7 deaths are reported? 8 A. Yes. The reports are not dissimilar. 9 Q. And it goes on to say that "there is, in 10 both miners and millers, a significant excess of 11 overall mortality, mainly accounted for by 12 respiratory diseases by pneumoconiosis." 13 A. Pneumoconiosis. 14 Q. And what is that, Doctor? 15 A. It's a dust disease. You get it with any 16 dust exposure, whether it's coal mining or any mining 17 area, but also sometimes in people exposed to dust in 18 the workplace. 19 Q. And is that cancer? 20 A. No. It's just damage to the lungs. 21 Q. And it goes on to say there's a low 22 incidence of cancer observed, right? 23 A. That's what is reported, yes. 24 Q. And he goes on to say his conclusion -- 25 MR. PANATIER: Your Honor, I'm just going to</p>

<p style="text-align: right;">Page 46</p> <p>1 object to continually leading.</p> <p>2 THE COURT: It has been leading. Can you</p> <p>3 just please rephrase?</p> <p>4 MS. SULLIVAN: Sure.</p> <p>5 BY MS. SULLIVAN:</p> <p>6 Q. Can you just read our jurors his</p> <p>7 conclusion, Dr. Hopkins?</p> <p>8 A. Yeah. Happy to read it.</p> <p>9 "In conclusion, our findings show that no</p> <p>10 relationship has been found between Italian talc</p> <p>11 exposure and cancer, whereas pneumoconiosis may be</p> <p>12 observed."</p> <p>13 Q. And is that consistent with what</p> <p>14 Dr. Rubino found in his pre -- in other words, were</p> <p>15 the conclusions the same?</p> <p>16 A. Yes. The so-called pre publication copy is</p> <p>17 not dissimilar in its conclusions from the final</p> <p>18 report.</p> <p>19 Q. And have you seen, Dr. Hopkins, any</p> <p>20 evidence that J&J had any involvement in what</p> <p>21 appeared in the final paper?</p> <p>22 A. None whatsoever.</p> <p>23 Q. And J&J, I think you told us, did not, did</p> <p>24 they fund the second study?</p> <p>25 A. There was no funding from Johnson & Johnson.</p>	<p style="text-align: right;">Page 48</p> <p>1 Can you talk to us about what that was and</p> <p>2 what that was about?</p> <p>3 A. Yeah. Keep it simple. A round robin is</p> <p>4 when you have, in this case, a test method, and you</p> <p>5 want to see if various laboratories are able to</p> <p>6 conduct that test method and get the correct result.</p> <p>7 So the round robin is each of the various</p> <p>8 laboratories are in the round and they're given the</p> <p>9 test method and say here, can you get this test method</p> <p>10 to work.</p> <p>11 So in this case it was the test method for</p> <p>12 measuring asbestos in talc using the CTFA J4-1.</p> <p>13 Q. And, Doctor, you told us that the J4-1</p> <p>14 method was x-ray and PLM?</p> <p>15 A. They're the two components, yes.</p> <p>16 Q. Polarized light and x-ray.</p> <p>17 And I think you also told us, did J&J do</p> <p>18 more than that?</p> <p>19 A. Yes. J&J, in addition to that, did</p> <p>20 transmission electron microscopy.</p> <p>21 Q. So was the round robin an effort to test</p> <p>22 the validity of the industry standard method with</p> <p>23 x-ray and polarized light?</p> <p>24 A. Validity, and also the ability of various</p> <p>25 laboratories to use that method.</p>
<p style="text-align: right;">Page 47</p> <p>1 THE COURT: Why don't we take a break before</p> <p>2 you move on to the next topic.</p> <p>3 MS. SULLIVAN: Sure.</p> <p>4 THE COURT: Members of the jury, we're going</p> <p>5 to take the morning break now. 15 minutes.</p> <p>6 Leave your notebooks here. Remember the</p> <p>7 instructions I provided to you: No discussions with</p> <p>8 regard to this case, including the testimony you just</p> <p>9 heard. No research, please.</p> <p>10 And be ready to come back up at 25 of. Thank</p> <p>11 you. Enjoy your break.</p> <p>12 (Jury exits.)</p> <p>13 THE COURT: We're off the record.</p> <p>14 (Recess: 10:17 a.m. to 10:39 a.m.)</p> <p>15 COURT OFFICER: Jury's entering.</p> <p>16 (Jury enters.)</p> <p>17 THE COURT: Please be seated. Make sure cell</p> <p>18 phones are turned off. Thank you.</p> <p>19 Thank you, Miss Sullivan.</p> <p>20 MS. SULLIVAN: Thank you, your Honor.</p> <p>21 THE COURT: Please continue.</p> <p>22 BY MS. SULLIVAN:</p> <p>23 Q. Dr. Hopkins, I want to switch topics, talk</p> <p>24 a little bit about round robin testing which our</p> <p>25 jurors have heard some about.</p>	<p style="text-align: right;">Page 49</p> <p>1 Q. And did J&J participate in that testing?</p> <p>2 A. They were one of the people in that test.</p> <p>3 Yes.</p> <p>4 Q. Was FDA involved in that effort as well?</p> <p>5 A. They were also one of the laboratories</p> <p>6 involved, yes.</p> <p>7 Q. And if we look at, this is Defense Exhibit</p> <p>8 8012. I believe it's a Plaintiff's Exhibit, but if</p> <p>9 not, I would like to move it in. It's Tab 53,</p> <p>10 Dr. Hopkins.</p> <p>11 Your Honor?</p> <p>12 MR. PANATIER: No objection.</p> <p>13 THE COURT: Admitted.</p> <p>14 (Defense Exhibit 8012, Tab 53, was moved into</p> <p>15 evidence.)</p> <p>16 BY MS. SULLIVAN:</p> <p>17 Q. Doctor, if we look at this March 1977</p> <p>18 document, is this a report of the initial round</p> <p>19 robin testing that tests the J4-1 XRD polarized</p> <p>20 light method in terms of the testing standard?</p> <p>21 A. Yes. It summarizes the initial results from</p> <p>22 the various laboratories.</p> <p>23 Q. And does it talk about what they're</p> <p>24 spiking the samples with to test the method?</p> <p>25 A. Yep. Yes. They state that Table 1 shows</p>

<p style="text-align: right;">Page 50</p> <p>1 that they spiked it with CTFA standard tremolite, 2 which is the common massive variety, should not be 3 detected as asbestiform. 4 Q. And what does that mean, Dr. Hopkins? 5 A. They were spiking it with an amphibole, 6 tremolite, but it's non-asbestos form of tremolite. 7 Q. Can you tell us whether the method was 8 determining if there was asbestos, and then also 9 whether or not they could distinguish between 10 asbestos and non-asbestiform material? 11 A. Yeah. The method was to determine if they 12 could find amphibole, which is the X-ray diffraction, 13 and they should have been able to detect amphibole 14 because the tremolite exists as an amphibole in its 15 asbestos form and non-asbestos form. 16 So then you would go on to look at part two 17 of the method, which is polarized light microscopy, to 18 see whether it was asbestos tremolite or non-asbestos 19 tremolite. 20 Q. And if we look at the actual test results, 21 going to page 4 of the report, are you with me, 22 Doctor? 23 A. Yes. 24 Q. And so it says that, it should be a plus 25 if they -- can you tell us what that means here on</p>	<p style="text-align: right;">Page 52</p> <p>1 tremolite, which is what they spiked it with, right? 2 A. Yes. You then go on to look at polarized 3 light microscopy, which is part two. And if you 4 detect that, then you put a circle around it. 5 Q. And it looks like one, two, three, four, 6 five, I'm not sure if the FDA did this part or not, 7 but five of the seven labs actually did, were able 8 to tell the difference between whether it was 9 asbestos or not? 10 A. They were. Yes. 11 Q. And, Doctor, was there some follow-up to 12 this testing methodology? 13 A. There was. Yes. Because as were made clear 14 in some of the reports, not all of the labs got it 15 right the first time. So there was some follow-up. 16 Q. And by the way, did J&J get it right the 17 first time? 18 A. They did. Yes. 19 Q. And if we look at defense exhibit -- I'm 20 sorry, looks like it's a Plaintiffs' Exhibit, 2563 21 in evidence, I would show you, that's at Tab 52. 22 Doctor, is this a follow-up document about 23 the minutes of the round robin testing? 24 A. It is. Yes. It summarized, they had a 25 meeting and discussed the results from pictures we've</p>
<p style="text-align: right;">Page 51</p> <p>1 top? 2 A. Sample plus that's on the right-hand side, 3 it would fail the CTFA method part one; in other 4 words, you'd think oh, there's a problem here. But 5 part one is just X-ray diffraction. So all you're 6 saying is an amphibole with part one. 7 Q. So if there's a plus there does that mean, 8 can you tell us whether that means they found an 9 amphibole or not? 10 A. A plus means that it failed CTFA 1, which 11 would imply you've got an amphibole present, so you 12 then need to determine is that amphibole asbestos 13 amphibole or non-asbestos, and that's when you do part 14 two, which is the, the little circle on the left-hand 15 side. 16 Q. So can you tell us whether fail is like 17 failing a drug test, if it's a plus they found a 18 drug or if it's a plus they found the amphibole? 19 A. If it's a plus, they found the amphibole. 20 Q. And so in here it looks like one, two, 21 three, four, five, six of the seven labs found the 22 amphibole, right, six pluses? 23 A. They did. Yes. 24 Q. And then it says here there should be a 25 circle if you can tell that it's not asbestiform</p>	<p style="text-align: right;">Page 53</p> <p>1 just seen on the screen. 2 Q. Does it show that the FDA was involved in 3 assessing this method for testing of asbestos? 4 A. Yes. Yes. They were part of the team. 5 Q. And it talks about to verify whether the 6 method is accurate, reliable and practical, right? 7 A. That was the purpose of the method, of the 8 round robin, the test facility, to see if -- 9 Q. Yeah. 10 A. -- the various labs could get it to work as 11 a reliable method. 12 Q. It says the objectives had not yet been 13 achieved, right? 14 A. Yes, not yet, because not every lab got it 15 right. 16 Q. And then what, in terms of follow-up, 17 what's suggested here as far as McCrone getting 18 involved? 19 A. Dr. Schulz, who is one of the participants 20 proposed that the OSHA field member and to be retained 21 in working with the definition, so he goes on to talk 22 about that, and look at a tentative revision of part 23 two in which incorporates suggestions from McCrone and 24 other microscopists in which instructions are more 25 clear and precise. And so those instructions were</p>

<p style="text-align: right;">Page 54</p> <p>1 distributed to the team.</p> <p>2 Q. So did Dr. McCrone's lab get involved to</p> <p>3 kind of help other labs become more reliable in</p> <p>4 implementing this method?</p> <p>5 A. That was what was reported, yes.</p> <p>6 Q. And, Doctor, are you aware of whether</p> <p>7 there was a re-test, another round robin test to</p> <p>8 test the method?</p> <p>9 A. There was a follow-up event. Yes.</p> <p>10 Q. And let's look at Plaintiffs' Exhibit</p> <p>11 3194. And this document is in May of 1977, right,</p> <p>12 the one we just looked at?</p> <p>13 A. Yes.</p> <p>14 Q. And I want to look at -- this is at Tab</p> <p>15 298.</p> <p>16 And, Doctor --</p> <p>17 THE COURT: Hold on.</p> <p>18 MS. SULLIVAN: Plaintiffs' Exhibit, your</p> <p>19 Honor, in evidence.</p> <p>20 THE COURT: Is it already --</p> <p>21 MR. PANATIER: No objection.</p> <p>22 THE COURT: Continue.</p> <p>23 BY MS. SULLIVAN:</p> <p>24 Q. And, Doctor, this is almost a year later.</p> <p>25 Does this talk about a recently completed round</p>	<p style="text-align: right;">Page 56</p> <p>1 testing, no asbestos was found?</p> <p>2 A. It does. Yes.</p> <p>3 Q. And, you know, I think the plaintiffs</p> <p>4 talked to you about destroying the copy of the</p> <p>5 table?</p> <p>6 A. That was mentioned. Yes.</p> <p>7 Q. And the table -- the table that said no</p> <p>8 asbestos was found?</p> <p>9 A. Well, that's what was reported.</p> <p>10 Q. And do you know, Doctor, why -- have you</p> <p>11 seen documents about why the table was destroyed,</p> <p>12 looking at Defense Exhibit 8396, Tab 297.</p> <p>13 Move it into evidence. Any objection?</p> <p>14 MR. PANATIER: I'm still taking a look at it.</p> <p>15 No objection.</p> <p>16 THE COURT: Admitted.</p> <p>17 (Defense Exhibit 8396, Tab 297, was moved</p> <p>18 into evidence.)</p> <p>19 BY MS. SULLIVAN:</p> <p>20 Q. Doctor, this looks like it's a letter from</p> <p>21 lawyers?</p> <p>22 A. Yeah. It does. From Washington DC.</p> <p>23 Q. Do they talk about antitrust concerns?</p> <p>24 A. Yes.</p> <p>25 Q. So do they say, the lawyers say, "Destroy</p>
<p style="text-align: right;">Page 55</p> <p>1 robin?</p> <p>2 A. Yes. This was ten months later. Yes.</p> <p>3 Q. And so, Doctor, you're aware there was a</p> <p>4 second round robin testing to --</p> <p>5 A. Yes.</p> <p>6 Q. -- determine if the test was reliable?</p> <p>7 A. That is what this document reports, the</p> <p>8 summary of the second version.</p> <p>9 Q. It talks --</p> <p>10 MR. PANATIER: Your Honor, I would like just</p> <p>11 to object. It doesn't say second version.</p> <p>12 THE COURT: Objection sustained.</p> <p>13 BY MS. SULLIVAN:</p> <p>14 Q. Does it talk about a recently completed</p> <p>15 test?</p> <p>16 A. It does, yes.</p> <p>17 Q. And it's about a year after the first one?</p> <p>18 A. It's about ten months later, yes.</p> <p>19 Q. Have you seen other documents confirming</p> <p>20 that there were two tests, Dr. Hopkins?</p> <p>21 A. I've not seen other documents that I can</p> <p>22 recollect. This is the document I'm aware of which</p> <p>23 summarized ten months later they --</p> <p>24 Q. Recently completed.</p> <p>25 Does it talk about the fact that in the</p>	<p style="text-align: right;">Page 57</p> <p>1 the code to prevent any antitrust issues"?</p> <p>2 A. They do, yes. That was their direction.</p> <p>3 Q. And it was the code that talked about the</p> <p>4 fact that nobody found any asbestos, right?</p> <p>5 A. That was the code, yes.</p> <p>6 MR. PANATIER: Leading, your Honor.</p> <p>7 THE COURT: Sustained. Please do not lead</p> <p>8 the witness.</p> <p>9 BY MS. SULLIVAN:</p> <p>10 Q. Okay. Doctor, in terms of the code, what</p> <p>11 was the finding as far as whether anybody had</p> <p>12 asbestos in their talc?</p> <p>13 A. Well, no one had asbestos in their talc.</p> <p>14 Q. I want to switch gears, Doctor, and talk</p> <p>15 to you about, you were asked about an article by</p> <p>16 Dr. Paoletti, and I think plaintiffs marked it for</p> <p>17 identification Compton 1.</p> <p>18 We'd like to put that up --</p> <p>19 MR. PANATIER: Your Honor, we didn't --</p> <p>20 THE COURT: Sidebar.</p> <p>21 MR. PANATIER: -- question about that.</p> <p>22 (Sidebar.)</p> <p>23 MR. PANATIER: I questioned Dr. Paoletti to</p> <p>24 documents that are in evidence. The first one was a</p> <p>25 letter from Dr. Ashton to Talc de Luzenac in France</p>

<p style="text-align: right;">Page 58</p> <p>1 discussing the Paoletti article. And then another 2 document where Dr. Ashton says we need to figure out 3 ways to compromise this. But I never cross-examined 4 him with the actual article. 5 MS. SULLIVAN: I'm on direct, your Honor, 6 I'll rephrase. 7 THE COURT: Okay. I'm sorry, he didn't 8 finish. 9 MS. SULLIVAN: I'm sorry. 10 MR. PANATIER: I would object to him now 11 interpreting published studies 'cause that is what this 12 is, and your Honor -- 13 THE COURT: What are you going to ask him? 14 MS. SULLIVAN: He was at the company. How 15 did they interpret it? It's part of my direct. 16 THE COURT: Okay. You need to create a 17 foundation that he was aware of it. 18 MS. SULLIVAN: Of course. 19 THE COURT: And I'll allow it and you can 20 redirect on it. 21 MR. PANATIER: At this point, your Honor, I 22 just -- 23 THE COURT: Please stop leading. 24 MR. PANATIER: That's all I was going to say. 25 THE COURT: No.</p>	<p style="text-align: right;">Page 60</p> <p>1 some investigation and analysis related to this 2 article? 3 A. They reviewed it and I think no action was 4 taken. There was nothing to be concerned about. 5 Q. And do you know, Doctor, whether this 6 article has anything to do with Johnson & Johnson 7 talcum powder? 8 A. There's no mention of Johnson & Johnson 9 talcum powder in the article. There's ore of the mine 10 that Johnson & Johnson sourced their talc from. 11 Q. And it talks about, in addition to some 12 other mines, some Italian mines. 13 Do you know, Dr. Hopkins, how many talc 14 mines there are in Italy? 15 A. There are many. Many have closed down over 16 the years. But historically, there were very many 17 because the Alp region is rich in talc mining, and 18 also some of the upper mines, the mountain range that 19 runs down. 20 So I certainly know there were over 50 at 21 one point in Vermont and Italy is considered bigger 22 than Vermont, so I'm not going to guess, but a lot. 23 Q. Do you have any evidence that the talc 24 being tested here is J&J talc or from J&J Italian 25 mine?</p>
<p style="text-align: right;">Page 59</p> <p>1 MS. SULLIVAN: I'm just trying to get him out 2 of here, but I understand. 3 THE COURT: We shouldn't have to be up here 4 leading and he shouldn't have to object every time. I 5 don't want to interrupt you with leading. Stop 6 leading. 7 I mean, I realize you're trying to get him 8 out of here, but let's not lead. 9 MS. SULLIVAN: Okay. 10 (Sidebar ends.) 11 BY MS. SULLIVAN: 12 Q. Doctor, do you have the Paoletti article, 13 sir? 14 A. I beg your pardon? 15 Q. Do you have it? 16 A. No. You didn't give me a Tab Number. 17 Q. I'm sorry. Tab 294. 18 A. Yes. 19 Q. And, Doctor, were you familiar, this 20 article was published in 1984. You were responsible 21 for safety of talc at J&J at the time, right? 22 A. Yes. I was certainly around in 1984. 23 Q. Were you familiar with this article? 24 A. Yes, I was. Yeah. 25 Q. And can you tell us, did the company do</p>	<p style="text-align: right;">Page 61</p> <p>1 A. There's nothing in this paper which 2 indicates it came from the Fontana mine that J&J took 3 their talc from. 4 Q. And, Doctor, I want to just ask you about 5 animal testing and actually an issue about lots. 6 I want to show you Tab 269, Doctor, and 7 Tab 270. And this is, I believe this is a Plaintiff 8 Exhibit 3695-45. 9 You have it? 10 A. Tab Number? 11 Q. This is Tab 269. 12 A. Thank you. 13 MR. PANATIER: No objection. 14 THE COURT: Are you seeking admission? 15 MS. SULLIVAN: I think it's in as a 16 Plaintiffs' Exhibit. 17 MR. PANATIER: It is. 18 THE COURT: Proceed. 19 BY MS. SULLIVAN: 20 Q. And, Doctor, this talks about X-ray 21 diffraction on a sample 228, right? 22 A. Yes. 23 Q. And it also talks about there's a note on 24 the flipside? 25 A. Yeah.</p>

<p style="text-align: right;">Page 62</p> <p>1 Q. And it says, "It's to allot a thousand 2 cans set aside for everybody to do everything on 3 it." 4 What is that about? 5 A. It related to lot 228 P. A lot number is 6 generally the designation given to a day's production. 7 So, for example, October 22nd, they would produce a 8 lot and that would be given that day's production 9 code. So it relates to a lot produced on that day. 10 And of that lot, the back note talks about 1,000 cans 11 set aside, so that would be a very much part of that 12 day's production. 13 Q. And is there a reason the company would 14 set aside a specific lot for testing? 15 MR. PANATIER: Calls for speculation. 16 THE COURT: Sustained. 17 BY MS. SULLIVAN: 18 Q. Do you know, Doctor, you're a 19 toxicologist, did the company fund and conduct 20 animal testing? 21 A. It's good practice if you're going to do any 22 test to understand the full profile of that product. 23 It's just good scientific practice so that you do 24 traceability. You do it with foods, many other 25 things. You can trace the history. So a lot was set</p>	<p style="text-align: right;">Page 64</p> <p>1 an analysis that Dr. Pooley did of the Italian 2 mines. 3 Did he also do an analysis of Vermont 4 mines to assess the issue of asbestos in talcum 5 powder? 6 A. Yes. He spent some time in the Vermont mine 7 and took rock samples of the areas that had been mined 8 and areas that had not been mined to understand the 9 geology of the Hammondsville mine. 10 Q. And I'd like to show you, going to Tab 18, 11 Doctor, Defense Exhibit 7046, and I'd like to move 12 it into evidence. 13 MR. PANATIER: There won't be an objection to 14 this area. 15 THE COURT: Okay. Admitted. 16 Tab 18, right? 17 MS. SULLIVAN: I believe so. Yes. 18 Yeah, Tab 18. 19 (Defense Exhibit 7046, Tab 18, was moved into 20 evidence.) 21 BY MS. SULLIVAN: 22 Q. Is this Dr. Pooley's report on the Vermont 23 mine? 24 A. On the Vermont mine, yes. 25 Q. And if we go to Dr. Pooley's conclusions</p>
<p style="text-align: right;">Page 63</p> <p>1 aside and you'd understand the profile of that 2 product. 3 Q. And, Doctor, is there -- was that -- was 4 228 P, was that a production lot; in other words, it 5 was part of the regular production? 6 A. Well, that would be the designation for that 7 particular day's production. 228 P was related to one 8 particular day's production. 9 Q. And thank you, Doctor. 10 I'm sorry, I want to go back. There was 11 some suggestion that J&J set aside this lot as a 12 clean lot for testing. 13 Is that fair? 14 MR. PANATIER: Speculation. 15 THE COURT: Sustained. 16 BY MS. SULLIVAN: 17 Q. Based on your experience and work at the 18 company, including familiarity with animal testing, 19 is that fair? 20 MR. PANATIER: It's still speculation. 21 THE COURT: Sustained. Move on. 22 BY MS. SULLIVAN: 23 Q. Doctor, I want to just go back to Vermont 24 for a minute. 25 And did Dr. Pooley, our jurors have seen</p>	<p style="text-align: right;">Page 65</p> <p>1 on page 48, can you tell our jurors whether 2 Dr. Pooley found any asbestos in the Vermont mine? 3 A. He does not report finding asbestos. 4 Q. And does he look with electron microscopy 5 and also polarized light microscopy, right? 6 A. Yes. 7 Q. And he says no fibrous components were 8 observed? 9 A. He does, yes. 10 MR. PANATIER: Leading, your Honor. 11 THE COURT: Sustained. 12 BY MS. SULLIVAN: 13 Q. Can you tell our jury what Dr. Pooley 14 found? 15 A. He said the amphibole minerals were found in 16 discrete locations and not disseminated throughout the 17 talc ores and not asbestiform in character. 18 Serpentine mineral was found in specimens located at 19 the center of the ore body, but no fibrous components 20 were observed. 21 Q. What does that mean that no fibrous 22 components were observed in the ore body and the 23 center of the ore body? 24 A. He did not find -- well, if he had found 25 serpentine mineral fibers it would be chrysotile, but</p>

<p style="text-align: right;">Page 66</p> <p>1 he did not find fibrous serpentine, so he did not find 2 asbestos. 3 Q. And what does it mean, he didn't find it 4 in the center of the ore body? 5 A. It just means he did not find asbestos. 6 Q. Doctor, are you also aware that the 7 Government did testing on Vermont mines, including 8 J&J's? 9 A. They did. Yes. 10 Q. I want to show you Tab 73. And this is 11 Defense Exhibit 9041. 12 May I publish? 13 MR. PANATIER: Yes. No objection. 14 THE COURT: Proceed. 15 BY MS. SULLIVAN: 16 Q. Doctor, Defense Exhibit 9041, is this the 17 report of NIOSH, the National Institute of 18 Occupational Safety and Health, and Harvard's 19 testing of Vermont mines including J&J's mine? 20 A. It is. Yes. 21 Q. And the paper talks about the fact -- does 22 the paper mention what the Government and what NIOSH 23 did to analyze whether there was asbestos in the 24 Vermont mine? 25 A. They took samples of materials and examined</p>	<p style="text-align: right;">Page 68</p> <p>1 plaintiffs, in opening statement and I think 2 throughout this trial, put up some boards, and did 3 we show you copies of those boards, about what they 4 claim are positive test results. And I'd like to 5 put up -- counsel, any objection to me showing your 6 board? 7 MR. PANATIER: No. 8 BY MS. SULLIVAN: 9 Q. I'd like to put up, for example, they 10 showed our jurors boards like this, right? 11 A. Okay. 12 Q. And have you actually looked at the 13 underlying documents referenced here as part of your 14 preparation -- 15 A. I believe so. Yes. 16 Q. And can you tell our jurors, and we'll go 17 through some of the documents, can you tell our 18 jurors, based on your review of the actual 19 documents, do any of these support the notion that 20 there's asbestos in Johnson & Johnson's talcum 21 powder? 22 A. Yeah. Based on my review of those reports, 23 none of them would support the contention that there 24 would be asbestos present in the powder. 25 Q. All right. And I just want to -- let's</p>
<p style="text-align: right;">Page 67</p> <p>1 them by appropriate techniques. 2 MR. PANATIER: Your Honor, this was all asked 3 and answered on the 25th. Page 229. 4 THE COURT: Sidebar. 5 (Sidebar.) 6 THE COURT: Are you disputing whether or not 7 you covered this already? 8 MS. SULLIVAN: I don't believe I covered 9 this. 10 MR. PANATIER: Look. Found a study, I 11 objected, found a NIOSH study, on and on and on about 12 it, the confusion section, no asbestos found, all of 13 these. 14 MS. SULLIVAN: I'll move on, your Honor. 15 THE COURT: Thank you. 16 MS. SULLIVAN: Can I just ask him do they 17 conclude there was asbestos? 18 THE COURT: You've already covered the 19 conclusions, so move on. 20 (Sidebar ends.) 21 BY MS. SULLIVAN: 22 Q. I forgot I already asked you about this. 23 I'm sorry, Dr. Hopkins. I'm sorry, jurors. It's 24 been a while. 25 Doctor, I want to switch topics to the</p>	<p style="text-align: right;">Page 69</p> <p>1 walk through some of these reports and talk about 2 what we're looking at here. 3 So the first, the first several reports 4 relate to Battelle, right? 5 A. Yes. Battelle is an independent test 6 facility. 7 Q. And first, Doctor, we already talked about 8 is amphibole, is a finding of amphibole, is that 9 asbestos? 10 A. Not unless you confirm it's asbestos. 11 Amphibole is a rock form which is pretty well anywhere 12 around the world. 13 Q. And tremolite, is that asbestos? 14 A. Not unless it says tremolite asbestos. 15 Q. And if we look at the Battelle reports 16 here, what they're reporting, do any of the Battelle 17 reports say asbestos? 18 A. I've read the Battelle reports. I could not 19 find the word asbestos in any of those describing 20 tremolite asbestos. 21 Q. And looking at -- so, for example, it says 22 here that Battelle found fibrous amphibole, right? 23 A. It does. Yes. 24 Q. But if you look at the actual report, it 25 says fibrous talc and amphibole, right?</p>

<p style="text-align: right;">Page 70</p> <p>1 MR. PANATIER: Your Honor, just for 2 clarification, it says, "and fibrous particles of talc 3 and amphibole." 4 MS. SULLIVAN: Yeah. "Fibrous particles of 5 talc and amphibole," right. 6 THE COURT: For the record, could you give 7 the identification of this document? 8 MS. SULLIVAN: Sure. Defense Exhibit 8382. 9 THE COURT: Thank you. 10 BY MS. SULLIVAN: 11 Q. I'm sorry, Doctor, do you have your 12 testing binder? 13 A. I just found it here, yes. 14 Q. And this should be Tab -- 15 A. Tab 3. 16 Q. Defense number is 8382. 17 Do any of the Battelle documents talk 18 about asbestos or mention asbestos? 19 A. I read the documents. I could not find that 20 they reported finding asbestos. 21 Q. And so, and in fact, the Battelle reports, 22 if we look at them, do they mention -- 23 THE COURT: So, for the record, what are you 24 now putting up there? 25 MS. SULLIVAN: I'm sorry, this is Plaintiffs'</p>	<p style="text-align: right;">Page 72</p> <p>1 Q. And do they ever say tremolite asbestos? 2 A. Again, I have not seen the word tremolite 3 asbestos. 4 Q. And then in the 661 report it says altered 5 amphibole. Is that asbestos? 6 A. Again, it's a mineralogical statement. I 7 have not seen the word asbestos associated with 8 altered amphibole, so I am not going to comment any 9 more than that, but it does not say asbestos. 10 Q. Okay. And see what I've got here. 10/13. 11 So looking at 10/13/61, it says, "Trace 12 tremolite and amphiboles," quote, "usual 13 contaminants," right? 14 And if we look at Tab TB 12, Plaintiffs' 15 Exhibit 25834, and this is page 1015. 16 Again, Doctor, does it say asbestos? 17 A. I need to read the -- 18 Q. I'm sorry. That's what we have. 19 A. I don't see the word asbestos there. 20 Q. It talks about, quote, unquote, 21 contaminants being these trace tremolite carbonates, 22 et cetera, right? 23 A. It does. Yes. 24 Q. And is trace tremolite asbestos? 25 A. Not unless it says tremolite asbestos.</p>
<p style="text-align: right;">Page 71</p> <p>1 Exhibit 1041, TB 5, Dr. Hopkins. 2 THE COURT: Thank you. 3 BY MS. SULLIVAN: 4 Q. But, Doctor, if you look at this, what 5 does it say in terms of whether there's asbestos 6 in -- 7 A. Can you give me the page number? 8 Q. Sure. This is TB 5, TB 5. 9 A. Yeah. 10 Q. And this is page 1382, or page 9 at the 11 top. 12 A. Okay. 13 Q. What does that say on the issue of whether 14 Battelle found asbestos? 15 A. No. They don't mention, like I say, I have 16 not seen the word asbestos at this part of the 17 results. They describe it as trace of tremolite. 18 Q. And so these tests, Doctor, do any of 19 these tests report asbestos in talc? 20 A. I have not found that statement in any of 21 the reports there's a finding of asbestos. They 22 report the minerals, but they do not use the word 23 asbestos. 24 Q. They talk about tremolite, right? 25 A. That's one of the minerals, yes.</p>	<p style="text-align: right;">Page 73</p> <p>1 Q. Because, as you told our jury, there's two 2 kinds, right? 3 A. Yes, there are. 4 Q. And again, is amphibole asbestos? 5 A. Not unless it's confirmed by polarized light 6 or transmission microscopy. 7 Q. And can you tell us what amphibole refers 8 to? 9 A. Amphibole just refers to the X-ray 10 diffraction picture you get, which is the chemical 11 composition. 12 Q. And then if we look at 4766, it talks 13 about serpentine altered amphibole? 14 A. What Tab Number is that? 15 Q. I'm sorry. This is TB 14. 16 And first, are you there, Doctor? 17 A. Yes. 18 Q. On page 6693. It talks about serpentine 19 and altered amphibole, right? 20 A. Give me a second. 21 Yes. It describes the mineralogical 22 composition of the ore. 23 Q. Does it say asbestos? 24 A. It does not mention asbestos. No. 25 Q. And if you turn the page, it says, I'm</p>

<p style="text-align: right;">Page 74</p> <p>1 sorry, it says, "X-ray analysis of the unleached 2 concentrate showed only talc to be present in 3 determinable amounts with no indication of 4 serpentine." 5 What does that say on the issue of whether 6 they found asbestos? 7 A. They do not report finding asbestos. 8 Q. Do they actually report -- do they report 9 the opposite? 10 A. It says they found no serpentine, which is 11 one form of asbestos, chrysotile serpentine could be, 12 but they did not find it. 13 Q. And then they've got some documents here 14 from 7/13/66 -- in any event, Doctor, we'll find 15 them. 16 But this says tremolite and tremolite, 17 right? 18 A. Yes. It says, they quote tremolite, yes. 19 Q. And you've looked at those documents. 20 Do they say asbestos? 21 A. These are ancient samples. Yes. I've 22 looked at those documents. They do not. 23 Q. And these are from bottles, in any event, 24 that the plaintiffs here would have never used 25 because they're from the 1920s and '30s, right?</p>	<p style="text-align: right;">Page 76</p> <p>1 it say here, Doctor? 2 A. It's an internal memorandum from Mr. Ashton 3 to Dr. Hildick-Smith, the MD, medical director. He 4 says that, "We consider the pre non-talc needles but a 5 trace both on a count and area basis. Those particles 6 are tremolite." 7 Q. And what does that mean on the issue of 8 whether this is asbestos? 9 MR. PANATIER: Objection, your Honor. This 10 calls for speculation. 11 THE COURT: Sustained. 12 BY MS. SULLIVAN: 13 Q. Doctor, does this document say asbestos? 14 A. The document does not use the word asbestos 15 at any point. 16 Q. And if we go to the actual testing 17 reporting talks about non-talc needles, right? 18 A. Yes, it does. 19 Q. And there is a -- there is a follow-up 20 report here, that was tab -- again, Doctor, does 21 this report say anything about asbestos -- I'm 22 sorry. I have it. 23 Does it say anything about asbestos? 24 A. The report does not use the word asbestos. 25 Q. And if we look at Defense Exhibit 7014 in</p>
<p style="text-align: right;">Page 75</p> <p>1 A. Yes. 2 MR. PANATIER: Leading, your Honor. 3 THE COURT: Sustained. Please stop leading. 4 BY MS. SULLIVAN: 5 Q. Assume, Doctor, for purposes of my 6 question, the earliest was in the '50s, would any 7 of -- in terms of their use, would any of them have 8 used these bottles? 9 A. If they're manufactured in the 1930s, that 10 would be unlikely. 11 Q. And then this says tremolite; does it 12 say -- 13 A. Just says tremolite, yes. 14 Q. And then did you look at this entry of 15 1/30/67, is that even a J&J product? 16 A. No. It's described as a competitive 17 product. 18 Q. Then if we go to this chart here. 19 And again, we have Battelle saying 20 tremolite. Is that asbestos? 21 A. Not unless it says tremolite asbestos. 22 Q. And if we go to 5/10/71, it talks about 23 tremolite needles. And if we look at page, if we 24 look at this document and the test results, Doctor, 25 this is Tab TB 55, Plaintiff Exhibit 2372; what does</p>	<p style="text-align: right;">Page 77</p> <p>1 the same tab, does it have a follow-up report as to 2 whether those non-talc needles are asbestos or not? 3 A. What page is that? 4 Q. Should be the same tab. TB 19. 5 THE COURT: Are we going to a different 6 document? 7 MS. SULLIVAN: Yeah. It should be in the 8 same -- 9 MR. NOLAN: TB 19 and then A. 10 MS. SULLIVAN: Same tab, your Honor. Same 11 tab. TB 19. It's behind the original report. 12 BY MS. SULLIVAN: 13 Q. This is a follow-up, Doctor, from the 14 Colorado School of Mines on the same testing sample? 15 A. What page? What Bates number, please? 16 Q. This should be the second document in the 17 tab, and this is page 1. 18 A. I have it. Yes. 19 Q. And can you tell us what the Colorado 20 School of Mines is reporting on these non-talc 21 needles? 22 A. Yes. They state that "In regard to the 23 non-talc needles noted in the point count report of 24 June 24, 1971, it's now believed that many of these 25 could actually have been rolled up plates that yielded</p>

<p style="text-align: right;">Page 78</p> <p>1 anomalous shapes in the optical properties." 2 Q. What does that mean? 3 A. As I said yesterday, if you roll up a plate 4 of talc, it can look like a needle under a microscope. 5 Q. Talc. 6 So, Doctor, did the Colorado School of 7 Mines report asbestos in this analysis? 8 A. They have not reported asbestos. No. 9 Q. And if we look, continuing on, Doctor, the 10 next one says tremolite and actinolite. 11 Does that say asbestos? 12 A. Not unless it says tremolite or actinolite 13 asbestos. 14 Q. And have you talked about whether there 15 are two kinds of tremolite and actinolite, 16 asbestiform and not? 17 A. Yes. There's the asbestos form and the 18 non-asbestos forms of those minerals. 19 Q. And our jurors have heard a lot about 20 Dr. Langer and Mount Sinai. 21 Can you tell us in his final published 22 paper, did he find asbestos in Johnson & Johnson's 23 talcum powder? 24 A. In his published paper with Dr. Rohl in 25 1976, he did not report finding asbestos in the four</p>	<p style="text-align: right;">Page 80</p> <p>1 you have been doing. 2 MS. SULLIVAN: But can I ask him did J&J -- 3 he knows. He's a toxicologist. He knows about it. 4 MR. PANATIER: He has zero training in 5 asbestos whatsoever. He is not here as an expert. 6 MS. SULLIVAN: He has education and 7 experience for decades. 8 THE COURT: Stop. Stop. Stop. Argue to the 9 court, not to each other. 10 He does not have the training for that. He 11 can read a document as part of his role as a corporate 12 designee and in his role as a safety toxicology expert. 13 Go. 14 (Sidebar ends.) 15 BY MS. SULLIVAN: 16 Q. Doctor, moving on to 8671, and this would 17 be TB 56. 18 Does this actually -- can you tell us 19 whether this relates to product or ore or something 20 else? 21 A. Let me read it. 22 Q. Sure. 23 A. Yeah. The first, first sentence of the 24 letter said, "I've shipped one drum of Italian rock 25 from the Crosetto mine in the Chisone Valley of the</p>
<p style="text-align: right;">Page 79</p> <p>1 samples he tested of Johnson's Baby Powder and Shower 2 to Shower. 3 Q. And again, this is amphiboles. Is that 4 asbestos? 5 A. No. Amphibole just describes -- 6 MR. PANATIER: Your Honor, speculation. The 7 documents say what they say. 8 THE COURT: Sidebar. 9 (Sidebar.) 10 MR. PANATIER: Your Honor, if counsel wants 11 to continue to show documents and ask whether a word 12 appears, that's fine, but she continually is asking him 13 is that asbestos, and he is utterly unqualified to do 14 that. That's expert testimony. 15 MS. SULLIVAN: First, he's a toxicologist. 16 He's a corporate rep who interpreted the word 17 amphibole. It's already been established amphibole 18 does not necessarily mean asbestos. And, in fact, most 19 amphiboles are not asbestos. 20 THE COURT: You can refer him to specific 21 documents, but to just look at a phrase, you haven't 22 testified with regard to a word without putting it in 23 context of the document -- 24 MS. SULLIVAN: I -- 25 THE COURT: So take him to the document as</p>	<p style="text-align: right;">Page 81</p> <p>1 Italian Alps," which is -- the J&J was from the 2 Fontana mine. 3 Q. Is this even J&J's mine? 4 A. No. It's a different mine. J&J took their 5 talc from the Fontana mine. This relates to the 6 Crosetto mine, wherever that is. 7 Q. Then, Doctor, looking at 8971, it talks 8 about fines implicated in asbestos toxicology. 9 Is this even a test report, looking at Tab 10 57? 11 A. No. It appears to be a memorandum from the 12 research director, Tom Shelley, to a couple of people, 13 and he's commenting on the need to avoid fines. 14 Q. What are fines, Dr. Hopkins, based on your 15 experience and understanding? 16 A. Fines are when you've done your flotation, 17 the large particles rise to the top, but fines are the 18 small bits that sink to the bottom. 19 Q. And are fines asbestos? 20 A. No. Fines -- well, fines would generally be 21 regarded as talc. It's any small particle, it could 22 be chalk, quartz, various things that -- small, fine 23 bits that you don't want in your product. 24 Q. So does this document that they have on 25 their chart as evidence of asbestos in talc even say</p>

<p style="text-align: right;">Page 82</p> <p>1 anything about asbestos?</p> <p>2 MR. PANATIER: Your Honor, I'm going to</p> <p>3 object to that. The document speaks for itself.</p> <p>4 THE COURT: Sustained.</p> <p>5 BY MS. SULLIVAN:</p> <p>6 Q. Doctor, does this document mention</p> <p>7 asbestos?</p> <p>8 A. It does not.</p> <p>9 MR. PANATIER: Your Honor, the word is right</p> <p>10 there.</p> <p>11 THE COURT: Redirect.</p> <p>12 BY MS. SULLIVAN:</p> <p>13 Q. It talks about asbestos toxicology, right,</p> <p>14 Doctor?</p> <p>15 A. It talks about asbestos toxicology, which is</p> <p>16 separate from the product.</p> <p>17 Q. And this is August 9.</p> <p>18 And then if we go to McCrone, 9/3/71, it</p> <p>19 talks about actually medicated powder, right?</p> <p>20 A. Can you give me the Tab Number?</p> <p>21 Q. I'm sorry. This is tab, Tab 24,</p> <p>22 Plaintiffs' Exhibit 2398.</p> <p>23 A. It is in this book?</p> <p>24 THE COURT: Yes. In that book.</p> <p>25 A. Thank you.</p>	<p style="text-align: right;">Page 84</p> <p>1 of the asbestiform minerals in any of them. In</p> <p>2 particular, there are no bundles of chrysotile</p> <p>3 fibers."</p> <p>4 Q. And do they go on to say, "There is a</p> <p>5 possibility of contamination by approximately one</p> <p>6 fiber in our lab"?</p> <p>7 A. They report that. Yes. Due to some</p> <p>8 processing.</p> <p>9 Q. And can you tell our jurors, what was</p> <p>10 McCrone's conclusion as to whether any of these</p> <p>11 products had asbestos, based on their analysis?</p> <p>12 A. Let me just read the document.</p> <p>13 They concluded that the products were free</p> <p>14 from asbestos.</p> <p>15 Q. We talked about Dr. Langer and his final</p> <p>16 paper, right, Dr. Hopkins?</p> <p>17 A. We did. Yes.</p> <p>18 Q. And this is -- does this even -- this 2/72</p> <p>19 entry talks about -- all of these talk about</p> <p>20 tremolite, right?</p> <p>21 A. Can you raise it?</p> <p>22 Q. Oh, I'm sorry.</p> <p>23 A. Thank you. Yes, it does use the word</p> <p>24 tremolite.</p> <p>25 Q. Do any of these documents that you've</p>
<p style="text-align: right;">Page 83</p> <p>1 THE COURT: That's okay.</p> <p>2 A. Okay.</p> <p>3 Q. And does this -- and, Doctor, do you know</p> <p>4 whether any of our plaintiffs in this case even used</p> <p>5 medicated J&J powder?</p> <p>6 A. I have -- I do not know --</p> <p>7 Q. Fair enough.</p> <p>8 A. -- one way or the other.</p> <p>9 Q. Fair enough.</p> <p>10 Doctor, if we look at, there's some</p> <p>11 testing here that talks about finding one fiber of</p> <p>12 chrysotile, right?</p> <p>13 A. That's what is reported. Yes.</p> <p>14 Q. And is there, if you turn the page, is</p> <p>15 there additional testing and summary of that</p> <p>16 additional testing, right?</p> <p>17 A. Yes. There's a summary of the testing that</p> <p>18 was conducted. Yes.</p> <p>19 Q. And can you tell our jurors whether</p> <p>20 McCrone found asbestos in any of these three</p> <p>21 products, J&J talc, Shower to Shower, and medicated</p> <p>22 powder and feminine aerosol spray in the document</p> <p>23 they have on their chart?</p> <p>24 A. What the lab stated was "These products all</p> <p>25 seemed to be quite clean. We did not find any fibers</p>	<p style="text-align: right;">Page 85</p> <p>1 reviewed actually say asbestos?</p> <p>2 A. I've reviewed those documents. They do not</p> <p>3 say asbestos, no. They use the word tremolite.</p> <p>4 Q. And we talked about Dr. Hutchinson and the</p> <p>5 Minnesota Space Center to our jurors, right?</p> <p>6 A. We did, yes.</p> <p>7 Q. Did you speak about the testing by McCrone</p> <p>8 and Dr. Pooley with TEM?</p> <p>9 A. Yes. On the same sample. Yes.</p> <p>10 Q. And did those test labs find asbestos?</p> <p>11 A. The other test labs did not find asbestos.</p> <p>12 Q. And then, Doctor, running through this,</p> <p>13 Doctor, quickly, if we could.</p> <p>14 Again, we've got tremolite, actinolite,</p> <p>15 tremolite type, is this -- looking at these two</p> <p>16 tests, is that asbestos tremolite or actinolite?</p> <p>17 A. Not unless it says asbestos.</p> <p>18 Q. And did those documents say asbestos,</p> <p>19 those test documents?</p> <p>20 A. Can we refer to them, just to refresh me?</p> <p>21 Q. We can. We have to get back to that,</p> <p>22 Doctor. I want 419 and 427. Jack will get them for</p> <p>23 us.</p> <p>24 Then, Doctor, if we look at -- this is TB</p> <p>25 32, and if we look at the document does it say</p>

<p style="text-align: right;">Page 86</p> <p>1 tremolite on page 1?</p> <p>2 A. I'm reading it. Yeah. One minute.</p> <p>3 Yeah. It just says tremolite.</p> <p>4 Q. Does it mention asbestos?</p> <p>5 A. No. It does not. It just describes the</p> <p>6 word tremolite.</p> <p>7 MR. PANATIER: Your Honor, optional</p> <p>8 completeness?</p> <p>9 THE COURT: Sure.</p> <p>10 MR. PANATIER: "Four of these samples are</p> <p>11 suspected of containing tremolite based on the finding</p> <p>12 of one or two fibers per sample which satisfy the</p> <p>13 color/morphology criteria."</p> <p>14 That's all, your Honor.</p> <p>15 THE COURT: Thank you.</p> <p>16 BY MS. SULLIVAN:</p> <p>17 Q. Does that mean asbestos?</p> <p>18 MR. PANATIER: Your Honor, that's an</p> <p>19 objection.</p> <p>20 THE COURT: Sustained.</p> <p>21 BY MS. SULLIVAN:</p> <p>22 Q. Does that say asbestos, Dr. Hopkins?</p> <p>23 A. The word asbestos does not appear on this</p> <p>24 result, this test result.</p> <p>25 Q. And, Doctor, is actinolite asbestos?</p>	<p style="text-align: right;">Page 88</p> <p>1 asbestos by doing this with Italian talc. They find</p> <p>2 Pooley .05 of the tremolite type in Vermont."</p> <p>3 Right?</p> <p>4 A. That's what is written, yes.</p> <p>5 Q. Are they reporting the tremolite type is</p> <p>6 asbestos?</p> <p>7 MR. PANATIER: Your Honor, that calls for</p> <p>8 speculation.</p> <p>9 THE COURT: Sustained.</p> <p>10 BY MS. SULLIVAN:</p> <p>11 Q. Do you know, Dr. Hopkins, if Dr. Pooley</p> <p>12 ever found asbestos in J&J's finished product?</p> <p>13 A. I'm not aware that he's ever reported</p> <p>14 finding asbestos.</p> <p>15 Q. Jack's telling me that -- Jack is</p> <p>16 suggesting that this might be a typo and this</p> <p>17 probably is '73 'cause it's a '73 before and there's</p> <p>18 a '73 after.</p> <p>19 So let's look at 4/27/73, and this is</p> <p>20 Plaintiffs' Exhibit 2454.</p> <p>21 Doctor, if you could just look on the</p> <p>22 board, does that say asbestos?</p> <p>23 A. No. They said it identifies particles close</p> <p>24 to actinolite and tremolite.</p> <p>25 Q. Yeah.</p>
<p style="text-align: right;">Page 87</p> <p>1 A. It can be asbestos or it can be non-asbestos</p> <p>2 form.</p> <p>3 Q. And does this report asbestos?</p> <p>4 THE COURT: Are you still on the same</p> <p>5 document, counsel?</p> <p>6 MS. SULLIVAN: No. We're on 4/27/72.</p> <p>7 THE COURT: Okay. The witness is still</p> <p>8 looking at the same document, so maybe you should refer</p> <p>9 him to the right document.</p> <p>10 A. Give me the number of the document, please.</p> <p>11 Q. This is -- let's skip back to it and we'll</p> <p>12 look for it.</p> <p>13 Doctor, if we can go to TB, I don't know</p> <p>14 if we have the Tab Number here, it says Plaintiff</p> <p>15 Exhibit 1096. You've seen this document, Doctor.</p> <p>16 If you could just look on your screen.</p> <p>17 Our jurors have seen this. This says</p> <p>18 tremolite type, does it?</p> <p>19 THE COURT: For the record, what's the</p> <p>20 marking on that?</p> <p>21 MS. SULLIVAN: This is Plaintiff Exhibit</p> <p>22 1096.</p> <p>23 THE COURT: Thank you.</p> <p>24 BY MS. SULLIVAN:</p> <p>25 Q. It says, "They find no, quote, unquote,</p>	<p style="text-align: right;">Page 89</p> <p>1 A. Yeah.</p> <p>2 MR. PANATIER: Can I just see your copy?</p> <p>3 MS. SULLIVAN: It's your exhibit.</p> <p>4 MR. PANATIER: I know. Thank you.</p> <p>5 BY MS. SULLIVAN:</p> <p>6 Q. Doesn't mention asbestos in this document</p> <p>7 at all?</p> <p>8 A. No.</p> <p>9 Q. And then, Doctor, we have more tremolite,</p> <p>10 tremolite, right?</p> <p>11 A. Yes. There are two more mentions of the</p> <p>12 word tremolite.</p> <p>13 Q. Which you have told us could be either</p> <p>14 regular old tremolite or asbestos, right?</p> <p>15 A. Yes.</p> <p>16 Q. And does this say asbestos?</p> <p>17 A. It does not say asbestos.</p> <p>18 Q. And then if we look at 10/29/73.</p> <p>19 Doctor, September 13, '73, again talks</p> <p>20 about actinolite, right?</p> <p>21 A. That's what's written, yes.</p> <p>22 Q. And tremolite?</p> <p>23 A. That is, again, what is on the board.</p> <p>24 Q. Doesn't mention asbestos?</p> <p>25 A. It does not mention asbestos.</p>

<p style="text-align: right;">Page 90</p> <p>1 Q. And you've talked about how there's two 2 types of this? 3 A. Yes. The asbestos form and the non-asbestos 4 form. 5 Q. And then, Doctor, are you familiar with 6 this Dutch thing? 7 A. Yes. 8 Q. Is that even -- can you tell our jurors 9 whether that's even a test? 10 A. It was a study done by a Dutch consumer 11 organization on a sample of talc and they sent it away 12 for evaluation. 13 Q. And can you tell us what, looking at -- 14 can you tell us what the issue was with the Dutch 15 consumer organization? 16 A. Yeah. They very simply measured the 17 chemical structure, which was magnesium silicate, and 18 looked at it under the microscope and showed what 19 there appear to be fibers, but the fibers were exactly 20 construction of talc. So what they were observing 21 were talc fibers. 22 Q. And if we look at a follow-up document in 23 September of '73, and, Doctor, this is in TB 38. 24 This is Defense Exhibit 7070. Move into evidence. 25 THE COURT: 70 what?</p>	<p style="text-align: right;">Page 92</p> <p>1 document in part C? 2 A. What Bates Number page are we on? 3 Q. This is 1475. The document that 4 Miss Sampson just handed you. If you could read 5 part C to our jurors? 6 A. "The talc they're using, the Italian five 7 zeros, has been thoroughly analyzed by different 8 scientists in different countries by different 9 methods, and no detectable levels of asbestos have 10 been found." 11 Q. And does it go on to talk about the Dutch 12 definition that they were using for asbestos? 13 A. It does. Yes. That was the concern. 14 Q. And can you tell us what happened here? 15 A. May I read it? Yeah. 16 "By this definition, if the talc or the 17 common mineral impurity chlorite, a magnesium 18 silicate, appeared to look fibrous by their analytical 19 technique, then it would be called asbestos. However, 20 if, for example, tremolite or anthophyllite or 21 asbestos were present from the fibrous form, then by 22 their definition it would not be called asbestos since 23 they have elements other than just magnesium and 24 silicon. Tremolite is a calcium magnesium silicate 25 and anthophyllite is a magnesium iron silicate."</p>
<p style="text-align: right;">Page 91</p> <p>1 MR. PANATIER: No objection. 2 MS. SULLIVAN: 7070. 3 THE COURT: Admitted. 4 (Defense Exhibit 7070, Tab 38, was moved into 5 evidence.) 6 BY MS. SULLIVAN: 7 Q. And it talks about the definition issue, 8 does it? 9 A. Yeah. Can you give me the Tab Number again? 10 Q. Sure. 11 That's Tab Number TB 38. It's probably 12 the second document in the mix. 13 THE COURT: We don't have a 38. 14 A. I don't have a 38. 15 THE COURT: It's coming right now. 16 MS. SULLIVAN: I'm sorry, your Honor. 17 THE COURT: That's all right. 18 Thank you. 19 BY MS. SULLIVAN: 20 Q. You have it, Doctor? 21 A. I do, yes. 22 Q. Does it talk about an issue with 23 definitions? 24 A. That was the concern, yes. 25 Q. Can you tell us what it also says in this</p>	<p style="text-align: right;">Page 93</p> <p>1 Q. So what's going on there, Dr. Hopkins? 2 A. Well, if proper asbestos had been there, 3 their method would not have discovered it. But what 4 they were observing was talc. 5 MR. PANATIER: Your Honor, this is outside 6 the scope of testimony. 7 THE COURT: Sustained. The jury is to 8 disregard that testimony. 9 BY MS. SULLIVAN: 10 Q. Doctor, the -- did the company find -- 11 reading C, can you tell us whether the company found 12 asbestos in their Italian talc? 13 A. They did not. 14 Q. And if you go to, this is more tremolite, 15 anthophyllite, right? 16 A. Yes. 17 Q. Does it say asbestos? 18 A. No. Just says tremolite, possibly 19 anthophyllite. 20 Q. Same with Dr. Reynolds, it talks about 21 actinolite and anthophyllite, fiber form, right? 22 A. That's the description given, yes. 23 Q. Is that asbestos? 24 A. It doesn't state asbestos. 25 Q. And then we go to chrysotile times four</p>

<p style="text-align: right;">Page 94</p> <p>1 here, and 5/14/74, and is that the document we just 2 looked at, the spiked samples? 3 A. Can you give me the tab reference, please? 4 Q. Sure. TB 58. 5 MR. PANATIER: Your Honor, objection. 6 Cumulative, and also attorney testifying. 7 THE COURT: You already covered this area. 8 Move on. 9 MS. SULLIVAN: I just was confirming -- 10 THE COURT: We've covered this area. Move 11 on. 12 MS. SULLIVAN: But, your Honor, I didn't 13 cover it with respect to the chart. 14 THE COURT: Sidebar. 15 MS. SULLIVAN: I'm happy to move on. I'm 16 just confirming this is the spiked sample. 17 THE COURT: Sidebar. Sidebar. 18 The jury will disregard that comment. 19 (Sidebar.) 20 MR. PANATIER: My objection is this is 21 cumulative. It's asked and answered repeatedly. And 22 also my objection is that counsel for Johnson & Johnson 23 is continually injecting her own opinion to these 24 questions. It isn't based on the evidence at all. 25 If she wants to establish that some samples</p>	<p style="text-align: right;">Page 96</p> <p>1 break. 2 So leave your notebooks here. Please 3 remember the court's instructions, and be back -- be 4 ready to come back five of. 5 You know what, make it a ten-minute break and 6 leave it here on the floor. 7 Okay. Thank you. 8 Counsel, can I see you at sidebar. 9 (There is a discussion off the record.) 10 (Recess: 11:42 a.m. to 11:51 a.m.) 11 COURT OFFICER: Jury's entering. 12 (Jury enters.) 13 THE COURT: Please be seated. Make sure cell 14 phones are turned off. 15 BY MS. SULLIVAN: 16 Q. Doctor, we talked about the last two 17 entries of May 14, '74. 18 Did we already discuss with our jury the 19 research protocol and the reagent sample? 20 MR. PANATIER: Your Honor, I think there's a 21 ruling on this. 22 THE COURT: There is one question you were 23 going to ask on that, counsel. 24 MS. SULLIVAN: Yeah. 25 BY MS. SULLIVAN:</p>
<p style="text-align: right;">Page 95</p> <p>1 there were spiked, that's fine. She's already done 2 that. 3 THE COURT: We've covered this document. 4 Let's move on. 5 MS. SULLIVAN: Can I just -- 6 THE COURT: We've covered it. 7 MS. SULLIVAN: Okay. 8 THE COURT: Hold on. Come back. I 9 apologize. Just state what you wanted to do on the 10 record for purposes -- 11 MS. SULLIVAN: I just wanted to say we've 12 already covered that this involved samples that were 13 spiked. 14 THE COURT: Okay. We're going to move on, 15 you've covered it. 16 MR. PANATIER: That's a leading question. 17 THE COURT: Yes. 18 (Sidebar ends.) 19 BY MS. SULLIVAN: 20 Q. Doctor, we've already covered -- 21 THE COURT: We've already covered that. Move 22 on. 23 BY MS. SULLIVAN: 24 Q. Doctor -- 25 THE COURT: Hold on. Let's take a 15-minute</p>	<p style="text-align: right;">Page 97</p> <p>1 Q. So -- 2 THE COURT: You've already covered that. 3 That was the question. Thank you. 4 BY MS. SULLIVAN: 5 Q. And then, Doctor, I want to go back to the 6 Johns-Manville one now, found at Tab 36, Plaintiffs' 7 Exhibit 1056. And that's an entry here, chrysotile? 8 THE COURT: Does that document have a marking 9 for purposes of identification? 10 MS. SULLIVAN: It's Plaintiffs' Exhibit 1056. 11 MR. PANATIER: It's not in evidence, but 12 we'll offer it. 13 MS. SULLIVAN: No objection. 14 THE COURT: Admitted. 15 (Plaintiff's Exhibit 1056 was moved into 16 evidence.) 17 THE COURT: Did you find it, Doctor? 18 A. I do. Yes. Thank you. 19 Q. And if we go to, Doctor, if you look at 20 the document on page, looks like page 3, page 2, 21 talks about Johnson's Baby Powder, right? 22 A. Yes. I have the table. Yes. 23 Q. And it says that it might be, the 24 chrysotile finding, what does it say here? 25 A. It quotes chrysotile by volume, PPM 3,000.</p>

<p style="text-align: right;">Page 98</p> <p>1 Q. And does it say, does it have remarks on 2 the bottom, next to 14? 3 A. Relating to -- yeah. May be contamination. 4 Yeah. 5 Q. And then, Doctor, looking at the Defense 6 Exhibit 8056, the same tab, I believe, if not I have 7 a copy. 8 I'd like to move it in? 9 THE COURT: Do you have copies? 10 MS. SULLIVAN: I have a copy, yes. 11 MR. PANATIER: Thanks. 12 THE COURT: Keep turning pages, Doctor. 13 Next. 14 MR. PANATIER: I don't have an objection, 15 your Honor. 16 BY MS. SULLIVAN: 17 Q. And, Doctor -- 18 THE COURT: Hold on. 19 A. Yep. 20 THE COURT: It continues. There you go. 21 A. Thank you. 22 THE COURT: You're welcome. 23 BY MS. SULLIVAN: 24 Q. Can you tell our jurors, did J&J follow-up 25 and did McCrone test the Johns-Manville sample that</p>	<p style="text-align: right;">Page 100</p> <p>1 that the above fibers," in quotes, "might be wrongly 2 identified as chrysotile." And they describe and say 3 that "two factors make this possible," and they go on 4 to describe that. 5 Q. In the second paragraph does it talk about 6 Dr. Pooley and what he reports? 7 A. Mr. Grieger, who's at McCrone, stated, "Such 8 particles had been observed by him in earlier talc 9 samples and had been shown previously to be other than 10 chrysotile. 11 "Dr. Pooley, in a phone call to Dr. Rolle, 12 also reported seeing them during the course of his 13 talc studies. He concluded from microprobe work that 14 these particles are fibrous talc." 15 Q. And that is the Johns-Manville sample. 16 And then, Doctor, I'm going to try quickly 17 before lunch to go through the last two testing 18 boards, but I want to ask you a couple questions 19 first. 20 If J&J -- when you were head of product 21 safety, if J&J Baby Powder or Shower to Shower had 22 had asbestos, would you have continued to sell it? 23 A. No. 24 Q. And if J&J -- if somebody -- did anyone at 25 the company ever say wow, we have asbestos in our</p>
<p style="text-align: right;">Page 99</p> <p>1 they reported? 2 A. Yes. I remember this now, yes. 3 Q. And can you tell our jurors what McCrone 4 found in the sample? 5 A. On the Johnson's Baby Powder, which is lot Y 6 120, and on the Italian cosmetic talc from Talco 7 Grafite, they site, "In samples 1 and 3, however, we 8 did find evidence of small fiber-like entities which 9 at first glance might be mistaken for chrysotile 10 fibrils. Each was less than one micrometer in length 11 and one-hundredth angstrom units in width, and what 12 appears to be a central hollow core. 13 "This core is however, discontinuous, unlike 14 that of chrysotile. That these fibers are not 15 chrysotile is demonstrated conclusively by their 16 electron diffraction patterns which show them to be of 17 amorphous structure." 18 Q. And did McCrone find chrysotile in the 19 Johns-Manville samples? 20 A. What they stated are these fibers, in 21 quotes, are not chrysotile. 22 Q. And do they also talk about the 23 Johns-Manville method? 24 A. Yes. They state, "From what I know of the 25 Johns-Manville method, there is a strong possibility</p>	<p style="text-align: right;">Page 101</p> <p>1 product, let's hide it from everybody? 2 MR. PANATIER: Objection, your Honor. 3 Speculation. 4 THE COURT: Objection sustained. 5 BY MS. SULLIVAN: 6 Q. Did you ever hear anything like that; we 7 have asbestos in our product, let's hide it? 8 A. No. 9 Q. And did you ever instruct anyone let's 10 hide the fact that we have asbestos in our baby 11 powder? 12 A. No. I did not. 13 Q. Did any academic institution who tested 14 your powder say we found asbestos, but we're not 15 going to tell anybody? 16 A. I've never seen any documentation to that 17 effect. 18 Q. And have you ever seen any evidence that 19 J&J ever told any of these independent academic 20 institutions who tested your powder oh, if you find 21 asbestos, don't tell anybody? 22 A. Again, I've never seen any evidence to that 23 effect. 24 Q. And, Doctor, based on your review and 25 analysis of the testing documents, was there ever</p>

<p style="text-align: right;">Page 102</p> <p>1 asbestos in Johnson & Johnson's Baby Powder?</p> <p>2 A. None of the documents that I've reviewed</p> <p>3 have indicated the presence of asbestos in baby powder</p> <p>4 or Shower to Shower.</p> <p>5 Q. And, Doctor, when you were at the company,</p> <p>6 would you have put the safety of babies and people</p> <p>7 at risk?</p> <p>8 A. No way.</p> <p>9 Q. If we could, Doctor, go back to our</p> <p>10 testing board here. And we've got 4/4/74. That's</p> <p>11 Plaintiff 2523 and that's Tab 41.</p> <p>12 Do you have it, Doctor?</p> <p>13 A. Yes. Tab 41, yes.</p> <p>14 Q. Can you tell our jurors whether this is</p> <p>15 more of those research tests?</p> <p>16 A. Yes. This was an experiment or request to</p> <p>17 consider experiments on topics relating to possible</p> <p>18 contamination of talc.</p> <p>19 Q. And, Doctor, are these test results?</p> <p>20 A. No. They're experiments. People often did</p> <p>21 experiments, and this similarly describes the outline</p> <p>22 of experiments that people were debating.</p> <p>23 Q. Does this have anything to do with testing</p> <p>24 of final product?</p> <p>25 A. No. It's mainly a study of experiments that</p>	<p style="text-align: right;">Page 104</p> <p>1 samples. He's already acknowledged that.</p> <p>2 THE COURT: But there's no foundation that it</p> <p>3 relates to this time period and this in particular.</p> <p>4 MS. SULLIVAN: I'll move on.</p> <p>5 THE COURT: That's why I brought you here.</p> <p>6 MS. SULLIVAN: I'll move on.</p> <p>7 THE COURT: Thank you.</p> <p>8 (Sidebar ends.)</p> <p>9 BY MS. SULLIVAN:</p> <p>10 Q. Doctor --</p> <p>11 THE COURT: Objection is sustained. Let's</p> <p>12 move on.</p> <p>13 BY MS. SULLIVAN:</p> <p>14 Q. And then, Doctor, 4/24/74 is the next one.</p> <p>15 This is a McCrone document, Plaintiffs' Exhibit</p> <p>16 2049. This is at Tab 42 of your binder, Doctor.</p> <p>17 A. Yes.</p> <p>18 Q. And this relates to the Argonaut ore body?</p> <p>19 A. Yeah. The 38 core samples taken from a new</p> <p>20 ore body, which is, yes, considering and exploiting.</p> <p>21 Q. And if we go here, it talks about</p> <p>22 microscopy of ore samples from a new ore body that</p> <p>23 they're contemplating exploiting, right?</p> <p>24 A. That was the purpose of the study, to look</p> <p>25 at the ore body.</p>
<p style="text-align: right;">Page 103</p> <p>1 you could do with talc.</p> <p>2 Q. And, Doctor, you talked about the fact</p> <p>3 that in those experiments -- in those experiments,</p> <p>4 did the company spike samples?</p> <p>5 A. That was part of the project, if you spike</p> <p>6 or -- I'm sorry.</p> <p>7 MR. PANATIER: Lack of foundation, your</p> <p>8 Honor. Sorry, Dr. Hopkins.</p> <p>9 THE COURT: Sidebar.</p> <p>10 (Sidebar.)</p> <p>11 THE COURT: I don't know which board we're</p> <p>12 talking about.</p> <p>13 MS. SULLIVAN: It's --</p> <p>14 MR. PANATIER: This is all that talks about.</p> <p>15 It's experiments to try to destroy the fibrous</p> <p>16 chrysotile and tremolite as found in Vermont talc. It</p> <p>17 doesn't say anything about spiking.</p> <p>18 Again, this is just counsel injecting her own</p> <p>19 opinion.</p> <p>20 THE COURT: There's nothing on here that says</p> <p>21 spiking. That's why I was confused whether you had</p> <p>22 moved on to another document and that's why I called</p> <p>23 you here.</p> <p>24 MS. SULLIVAN: It was just a general question</p> <p>25 when they're doing these tests they were spiking the</p>	<p style="text-align: right;">Page 105</p> <p>1 Q. Again, Doctor, is this testing on finished</p> <p>2 product?</p> <p>3 A. No. As I said yesterday, you can test the</p> <p>4 acreage, the ore body, to see what's underground.</p> <p>5 Q. And if there was a finding of asbestos in</p> <p>6 an ore body, under J&J's quality assurance</p> <p>7 procedure, would they have used that ore?</p> <p>8 A. Well, the ore body could cover several</p> <p>9 acres. If there were materials that you didn't want,</p> <p>10 you wouldn't mine in that area.</p> <p>11 Q. So is this evidence of asbestos in Johnson</p> <p>12 & Johnson's finished talcum powder product?</p> <p>13 A. No. The report is a study of the ore body,</p> <p>14 the acreage, to see what's down there underground.</p> <p>15 Q. That they're contemplating exploiting?</p> <p>16 A. Yes.</p> <p>17 Q. And then, Doctor, I guess that's the same</p> <p>18 document. 5/9/74. This is Plaintiffs' Exhibit</p> <p>19 2050.</p> <p>20 And, Doctor, I'm just going to show you</p> <p>21 quickly, is this ore --</p> <p>22 A. What tab, please?</p> <p>23 Q. I actually don't have a tab. It's a</p> <p>24 plaintiff exhibit. I'm going to put it up. If you</p> <p>25 could just turn around. I apologize, Doctor.</p>

<p style="text-align: right;">Page 106</p> <p>1 And again, is this exploration of ore 2 body?</p> <p>3 A. Yeah. May '74. Examination of ores from 4 products in the Argonaut ore body.</p> <p>5 Q. Is this testing of finished product?</p> <p>6 A. No. It's testing of the ore body.</p> <p>7 Q. And then same document, 7/8/74.</p> <p>8 And, Doctor, I show you this document. 9 This is your Tab 44, Plaintiffs' Exhibit 2530.</p> <p>10 And does it talk about what's going on 11 here?</p> <p>12 A. Is this a tab in my book?</p> <p>13 Q. Yes. This is Tab 44.</p> <p>14 A. Yeah. It's a report from McCrone to Johnson 15 & Johnson saying they have examined, analyzed 21 16 samples of talc, so...</p> <p>17 Q. Just going back to a topic we had talked 18 about before, is this evidence that McCrone is 19 reporting when they find even one fiber?</p> <p>20 A. Yes. Yeah. They report one, two, yes.</p> <p>21 Q. And can you tell our jurors whether 22 McCrone found asbestos or contamination here?</p> <p>23 A. They say they found one small chrysotile 24 fiber and one tremolite fiber, probably chrysotile in 25 samples whatever, we found one chrysotile fiber and in</p>	<p style="text-align: right;">Page 108</p> <p>1 THE COURT: Can you show plaintiff's counsel 2 first?</p> <p>3 MS. SULLIVAN: Sure. It's Defense Exhibit 4 7835.</p> <p>5 MR. PANATIER: There's no objection to that.</p> <p>6 THE COURT: Go ahead.</p> <p>7 A. It's the leaflet we're talking about. Yeah, 8 okay.</p> <p>9 Q. Do you want to --</p> <p>10 A. No, I'm familiar with it, I just want to 11 make sure --</p> <p>12 Q. Can you tell our jurors what's going on 13 here?</p> <p>14 A. Yeah. The son of the mine owner decided to 15 produce a little brochure, a sales pitch for the talc, 16 and he wrote that up. It was translated into English 17 from Italian. And he used the word -- I don't 18 remember the exact words now, but can we put that up 19 on the screen?</p> <p>20 Q. Sure.</p> <p>21 A. Yeah. He used the word a hard silicate 22 content extremely low, only traces, as it demonstrated 23 by the testing of qualified technical institute.</p> <p>24 Q. And it also talks about here in this 25 brochure, generally tremolite or chrysotile is at</p>
<p style="text-align: right;">Page 107</p> <p>1 other samples we found two chrysotile fibers.</p> <p>2 Q. Do they talk about a brake line issue in 3 the bottom here?</p> <p>4 A. Yeah. These are the type of fibers that one 5 would normally get from brake line where debris which 6 could well be circulated in the atmosphere and 7 inadvertently fall in the sample preparation in the 8 processing of these materials.</p> <p>9 Q. And, Doctor, if there was a finding of 10 asbestos in the talc, would you have used this 11 product as finished -- as something that J&J sold?</p> <p>12 A. No. It would -- it would have failed to be 13 approved.</p> <p>14 Q. This is 7/8/74. Again, we talked about 15 tremolite. Does that say asbestos in 7/8/74?</p> <p>16 A. No. It just says tremolite fiber.</p> <p>17 Q. Doctor, are you familiar with this thing, 18 this 1974 Societa Talco issue; have you looked at 19 that?</p> <p>20 A. I have, yes.</p> <p>21 Q. Can you tell us what that's about?</p> <p>22 A. Can we put this up?</p> <p>23 Q. Do we have it?</p> <p>24 THE COURT: Show plaintiff's counsel.</p> <p>25 MS. SULLIVAN: Actually, here's my copy.</p>	<p style="text-align: right;">Page 109</p> <p>1 trace levels, right?</p> <p>2 A. That's what he reported. Yes.</p> <p>3 Q. And then if we go, Doctor, to page -- 4 there's the last document in your tab, which is 5 Defense Exhibit 7834, which I'd like to move into 6 evidence.</p> <p>7 THE COURT: What tab is that?</p> <p>8 MS. SULLIVAN: It's -- we don't have a tab, 9 your Honor. I'm happy to show counsel.</p> <p>10 MR. PANATIER: No objection if I can get a 11 copy of it.</p> <p>12 MS. SULLIVAN: Sure.</p> <p>13 THE COURT: I'm sorry. I apologize, what was 14 the marking?</p> <p>15 MS. SULLIVAN: Defense 7834, moving into 16 evidence.</p> <p>17 THE COURT: And there was no objection? 18 Admitted. Go ahead.</p> <p>19 (Defense Exhibit 7834, was moved into 20 evidence.)</p> <p>21 BY MS. SULLIVAN:</p> <p>22 Q. Doctor, on page 2, if you want to turn to 23 the screen, what does it say about the translation 24 issues between the brochure and English?</p> <p>25 A. It relates to translating the brochure,</p>

<p style="text-align: right;">Page 110</p> <p>1 which is originally in Italian, into an English 2 version. And Villa, that was the name of the son, he 3 presumed the talc talk by saying that it is not always 4 possible to translate Italian into technical English. 5 He explained that in Italian, a trace of 6 something such as chrysotile actually means none at 7 all could be found. In Italian he stated a trace 8 means not at all, but it always comes out wrong in 9 English. 10 Q. Doctor, in any event, was the brochure a 11 test result? 12 A. No. The brochure was Mr. Villa's story of 13 Italian talc. 14 Q. And then if we look at McCrone again, 15 7175, this is Tab 59. And, Doctor, this is 16 Plaintiff 2053. 17 Again, does this relate to ore? 18 MR. PANATIER: Your Honor, this was asked and 19 answered on the 25th of July. 20 MS. SULLIVAN: Not in the context of the 21 board, though, your Honor. 22 MR. PANATIER: It's still asked and answered. 23 THE COURT: Asked and answered. Move on. 24 You've covered it. 25 BY MS. SULLIVAN:</p>	<p style="text-align: right;">Page 112</p> <p>1 tremolite? 2 A. It does. Yes. 3 Q. Does it say asbestos? 4 A. No. It just says tremolite. 5 Q. And we talked about Dr. Paoletti's paper, 6 right? 7 A. We did. Yes. 8 Q. Any evidence that that relates to Johnson 9 & Johnson's talcum powder? 10 A. There was no mention in Paoletti's paper of 11 the Italian talc, Johnson's talc. 12 Q. And then we have again amphiboles, 13 amphiboles, amphiboles; any mention of asbestos in 14 these test documents? 15 A. No. No. 16 Q. And then McCrone 1990. And, Doctor, this 17 is your Tab 62. 18 A. Okay. 19 Q. And Plaintiffs' Exhibit 2035 talks about 20 90-30, right? 21 A. It does, yes. 22 Q. And, Doctor, if we look at 90-30, is that 23 even a Johnson & Johnson product, the last page? 24 MR. PANATIER: Objection. Calls for 25 speculation.</p>
<p style="text-align: right;">Page 111</p> <p>1 Q. And, Doctor, we talked about the HC 2 issue -- 3 THE COURT: I've already made a ruling. 4 MS. SULLIVAN: I'm sorry. I didn't know -- 5 THE COURT: You've already covered the HC 6 issue, too. 7 BY MS. SULLIVAN: 8 Q. Doctor, do those documents support the 9 notion that there's asbestos in Johnson & Johnson's 10 talcum powder as this board suggests? 11 MR. PANATIER: Speculation. 12 THE COURT: Sustained. 13 BY MS. SULLIVAN: 14 Q. Those documents don't relate to finished 15 product, correct, Doctor? 16 A. Correct. 17 Q. Okay. Finally, last page of the board 18 here, if we could just go to 11/5, this is on Tab 60 19 in your -- Doctor, given the court's ruling, it's 20 the same, it's the same issue, we've covered it? 21 A. Okay. I'm good with that. 22 Q. And does it relate to finished product, 23 this test? 24 A. It says, "Series of talc ore samples." 25 Q. And then in March '76, that says</p>	<p style="text-align: right;">Page 113</p> <p>1 THE COURT: Hold on. Don't answer just yet. 2 Sidebar. 3 MS. SULLIVAN: I can lay a foundation, your 4 Honor. 5 THE COURT: Sidebar. 6 Go ahead. Lay a foundation. 7 BY MS. SULLIVAN: 8 Q. Doctor, at the time you were at the 9 company, were you familiar with the codes and names 10 used for Johnson & Johnson talcum powder? 11 A. Yes. They're either 66 or 96. 12 Q. And is beta gamma product, would that have 13 been cosmetic talc or industrial talc? 14 A. Well, it wasn't cosmetic talc. It could 15 have been an industrial. But it was not the 66 or 96. 16 Q. So does 90-30 relate to Johnson & 17 Johnson's talcum powder? 18 A. Not to the talcum powder used in cosmetic 19 products. 20 Q. And then if we look at the bench sheet 21 from the same test report here on page 797, it talks 22 about anthophyllite? 23 A. Yes. 24 Q. Does it say anthophyllite asbestos? 25 A. No. It just says anthophyllite.</p>

<p style="text-align: right;">Page 114</p> <p>1 Q. And the jury's heard a lot about 2 Dr. Blount, and she's on this chart about three 3 times. 4 Are you aware of any, other than the 1991, 5 her 1991 paper that the jury's heard about, are you 6 aware of any other test results that you've seen or 7 that anyone's seen that showed a, quote, unquote, 8 positive test for asbestos? 9 A. From Dr. Blount or -- 10 Q. From Dr. Blount. 11 A. No. 12 Q. And, Doctor, the jury has seen her 13 testimony and you're aware that she's testified she 14 may have mixed up -- 15 MR. PANATIER: Your Honor, objection. 16 THE COURT: Sustained. The jury is to 17 disregard that question. 18 MR. PANATIER: Your Honor, can we have a 19 sidebar? 20 THE COURT: Yes. 21 MS. SULLIVAN: We're going to play -- 22 THE COURT: Sidebar. 23 (Sidebar.) 24 THE COURT: With respect, you keep trying to 25 get it in there about the issue of samples and other --</p>	<p style="text-align: right;">Page 116</p> <p>1 that, counsel. 2 MS. SULLIVAN: I'm sorry. 3 THE COURT: There you go. 4 A. No. It just says tremolite. 5 Q. And more Dr. Blount, which hopefully the 6 jury will hear her testimony. 7 The last entry, that's the TV station 8 we've already talked about, right? 9 A. In Sacramento County, yes. 10 Q. And did that show ever air? 11 A. No. It did not. 12 MR. PANATIER: Asked and answered. 13 THE COURT: Next question. 14 BY MS. SULLIVAN: 15 Q. And were you or anyone able to obtain a 16 sample and test it? 17 MR. PANATIER: Same. Asked and answered as 18 well. 19 THE COURT: It's been covered. Let's move 20 on. 21 MS. SULLIVAN: All right. 22 BY MS. SULLIVAN: 23 Q. So, Doctor, looking at these testing 24 boards and allegations of asbestos in talcum powder, 25 did J&J ever sell to the public talcum powder with</p>
<p style="text-align: right;">Page 115</p> <p>1 MS. SULLIVAN: It's on the board. I didn't 2 ask that question, your Honor. I said it's already 3 been put on the screen without objection, that she 4 mixed up the samples and that's her testimony. He's 5 familiar with that. 6 MR. PANATIER: Right. And this here has 7 nothing to do with that. That's the 1991 paper. And 8 again, counsel is injecting her own opinion in this 9 case. I'd ask for whether or not the deposition is 10 going to be played. We don't believe it is. 11 MS. SULLIVAN: Your Honor, they stood up and 12 told the jury let the jury see Dr. Blount's testimony. 13 THE COURT: You know what, why don't we save 14 that motion for when I hear it. 15 MR. PANATIER: Right. 16 THE COURT: We have this witness here that I 17 think we all would like to conclude today. 18 MR. PANATIER: All I'm saying is on this 19 part, there's no foundation for that question. 20 THE COURT: There is none. Move on. 21 (Sidebar ends.) 22 BY MS. SULLIVAN: 23 Q. And, Doctor, the RJ Lee Group also, does 24 it say asbestos? 25 THE COURT: You're going to have to move</p>	<p style="text-align: right;">Page 117</p> <p>1 asbestos? 2 A. My stance on that is no. 3 Q. And would you have let that ever happen? 4 MR. PANATIER: Asked and answered. 5 MS. SULLIVAN: Nothing further. Thank you. 6 THE COURT: Thank you. 7 Counsel, do you want to -- 8 MR. PANATIER: Yeah. I could start. 9 THE COURT: Go ahead. 10 MR. PANATIER: As long as everybody's okay 11 with it. 12 REDIRECT EXAMINATION BY MR. PANATIER: 13 Q. All right. I can get started. 14 I want to just start a little bit where 15 you left off. 16 You were asked about this document. 17 First of all, with regard to what was on 18 the boards, what was reported on those boards was 19 exactly what was reported in the documents that were 20 referenced by the boards, correct? 21 MS. SULLIVAN: Objection. Foundation. 22 Mischaracterizes the evidence. 23 THE COURT: Overruled. 24 You can answer. 25 A. Can I have the question again?</p>

<p style="text-align: right;">Page 118</p> <p>1 Q. Yes.</p> <p>2 What was represented on the boards, and</p> <p>3 counsel took you through them all. There's one by</p> <p>4 way of example. If it said, whatever was</p> <p>5 represented on the board is what was in the</p> <p>6 document, correct?</p> <p>7 A. Yeah. If it said tremolite and that's</p> <p>8 reported on the board as tremolite.</p> <p>9 Q. Right.</p> <p>10 You didn't find where we misrepresented</p> <p>11 anything about what was in those documents, did we?</p> <p>12 MS. SULLIVAN: Objection. Foundation.</p> <p>13 THE COURT: Sustained.</p> <p>14 BY MR. PANATIER:</p> <p>15 Q. You said you went through all the</p> <p>16 documents, right?</p> <p>17 A. Yes. We have the documents. Yes.</p> <p>18 Q. You said you went through them all, right?</p> <p>19 A. Yes.</p> <p>20 Q. Was anything that was reported in the</p> <p>21 documents any different than what was reported on</p> <p>22 the boards?</p> <p>23 A. No. The documents, if they report</p> <p>24 tremolite, say tremolite.</p> <p>25 Q. So let's look at one of the ones counsel</p>	<p style="text-align: right;">Page 120</p> <p>1 Babymate is not a J&J product.</p> <p>2 THE COURT: Very good. Move on.</p> <p>3 BY MR. PANATIER:</p> <p>4 Q. J&J doesn't make Babymate, right?</p> <p>5 A. That's correct.</p> <p>6 Q. Yet Johnson & Johnson repeatedly looked at</p> <p>7 and analyzed other companies' products, didn't they?</p> <p>8 A. I don't know how many, but it's not unusual</p> <p>9 to look at other companies' products to take a look</p> <p>10 and see what they're doing, yeah.</p> <p>11 Q. In fact, sir, you're aware, because I've</p> <p>12 asked you about this document before, haven't I?</p> <p>13 A. I believe so. Yes.</p> <p>14 Q. You're aware that Johnson & Johnson looked</p> <p>15 into Babymate, found fibrous tremolite, and</p> <p>16 concluded this is likely Italian talc, the same</p> <p>17 stuff we use, right?</p> <p>18 A. Can we read the exact phraseology?</p> <p>19 Q. Of course. Let's do that.</p> <p>20 MS. SULLIVAN: Dr. Hopkins, if you'd like my</p> <p>21 copy I can --</p> <p>22 A. Sure.</p> <p>23 MS. SULLIVAN: Counsel?</p> <p>24 A. Breaking my neck.</p> <p>25 Thank you.</p>
<p style="text-align: right;">Page 119</p> <p>1 asked you about.</p> <p>2 This one from January 30 of 1967 --</p> <p>3 MS. SULLIVAN: Can you tell me what exhibit</p> <p>4 it is?</p> <p>5 MR. PANATIER: Exhibit 2363.</p> <p>6 MS. SULLIVAN: Do you have a copy or a tab?</p> <p>7 MR. PANATIER: You guys handed me the copy.</p> <p>8 BY MR. PANATIER:</p> <p>9 Q. Let's see if I can -- it's not a great</p> <p>10 copy, but hopefully we can read it.</p> <p>11 Do you see here where it says baby powder</p> <p>12 at the top?</p> <p>13 A. Yes.</p> <p>14 Q. Right?</p> <p>15 MS. SULLIVAN: Your Honor, I'm just going to</p> <p>16 object. This isn't a J&J product.</p> <p>17 MR. PANATIER: Your Honor, they asked --</p> <p>18 THE COURT: You asked questions on this</p> <p>19 document. This is redirect.</p> <p>20 MS. SULLIVAN: Your Honor, I didn't show the</p> <p>21 document because you had ruled that nobody could. As</p> <p>22 long as everyone's clear, it's not a J&J product.</p> <p>23 THE COURT: No speaking objections. To the</p> <p>24 side.</p> <p>25 MR. PANATIER: I will make it very clear</p>	<p style="text-align: right;">Page 121</p> <p>1 Q. Yep.</p> <p>2 So if you look under the laboratory</p> <p>3 findings it says it's better than 97 percent pure</p> <p>4 talc. And then it says it has less than half a</p> <p>5 percent of the fibrous tremolite, right?</p> <p>6 A. Yes.</p> <p>7 Q. And it says, "This about compares with</p> <p>8 Italian Number 1 talc and is slightly less pure</p> <p>9 chemically than MTAL EXTRA talc," right?</p> <p>10 A. Yes.</p> <p>11 Q. And let's go right down here where it says</p> <p>12 talc source.</p> <p>13 Do you see that?</p> <p>14 A. I do, yes.</p> <p>15 Q. And it says, "The talc is not from a</p> <p>16 naturally occurring domestic talc. It could be a</p> <p>17 beneficiated floated domestic talc, as is available</p> <p>18 from North Carolina or Alabama.</p> <p>19 "The structure of the particles, however,</p> <p>20 and the presence of the associated carbonates and</p> <p>21 tremolite lead me to believe it is Italian talc."</p> <p>22 Is that what Johnson & Johnson Mr. Russell</p> <p>23 concluded?</p> <p>24 A. Yes. They say it is an Italian talc. And</p> <p>25 as we've said, there are many mines in Italy.</p>

<p style="text-align: right;">Page 122</p> <p>1 Q. How many mines are there?</p> <p>2 A. I don't know how many there are today, but</p> <p>3 certainly a lot of small ones closed down, but</p> <p>4 certainly they were well into double figures in the</p> <p>5 '70s.</p> <p>6 Q. Really? Which mines were these?</p> <p>7 A. There were several in the Alps area and in</p> <p>8 the Northern Italy near Alpine areas.</p> <p>9 Q. What were those called?</p> <p>10 A. Well, there's the Val Chisone Valley, but</p> <p>11 then there's a parallel valley several miles away</p> <p>12 where there's also several mines in Italy. The</p> <p>13 Italian talc has been around for a long time, various</p> <p>14 grades of Italian talc have been available for a long</p> <p>15 time --</p> <p>16 Q. I haven't asked you whether or not there</p> <p>17 were different grades.</p> <p>18 MS. SULLIVAN: Objection to the interruption.</p> <p>19 A. You asked me how many mines.</p> <p>20 Q. Yes.</p> <p>21 A. And what I said is more than double figures.</p> <p>22 Q. Yeah.</p> <p>23 And he said right here that it about</p> <p>24 compares with Italian Number 1, and Italian Number 1</p> <p>25 is what Johnson & Johnson was using, right?</p>	<p style="text-align: right;">Page 124</p> <p>1 A. No. What he's talking about asbestos</p> <p>2 toxicology is that that's, along with talcosis, is --</p> <p>3 relates to fines.</p> <p>4 Q. In our baby powder, or from our baby</p> <p>5 powder, right?</p> <p>6 A. You need to see the context. You read what</p> <p>7 is written, but the context is at that time the</p> <p>8 company was looking to raise the particle size of the</p> <p>9 plates, talc plates and reduce the number of fines,</p> <p>10 and this guy goes on to say that's the factor that's</p> <p>11 implicated. It doesn't say there's asbestos there.</p> <p>12 He said it's related to asbestos toxicology.</p> <p>13 Q. If there's no asbestos there -- you're a</p> <p>14 toxicologist, right?</p> <p>15 A. Yes.</p> <p>16 Q. If there's no asbestos there, there can't</p> <p>17 be asbestos toxicology; pretty obvious, right?</p> <p>18 MS. SULLIVAN: Objection. Argumentative.</p> <p>19 THE COURT: Sustained. Please rephrase.</p> <p>20 BY MR. PANATIER:</p> <p>21 Q. If there's no asbestos, you can't have any</p> <p>22 worry about asbestos toxicology, correct?</p> <p>23 A. On baby powder products you would not be</p> <p>24 worried, but as I've said before, the company</p> <p>25 manufactured 80 percent of its mining operation was</p>
<p style="text-align: right;">Page 123</p> <p>1 A. Yes, but the first sentence said it's better</p> <p>2 than 97 percent pure talc.</p> <p>3 Q. Okay.</p> <p>4 Let's look at, this was Exhibit 2767 which</p> <p>5 you looked at with counsel. And here it says, "It's</p> <p>6 important that we" --</p> <p>7 MS. SULLIVAN: I'm sorry, counsel, can I just</p> <p>8 have the date?</p> <p>9 MR. PANATIER: Yes. August 9, 1971.</p> <p>10 BY MR. PANATIER:</p> <p>11 Q. "It is important that we continue the</p> <p>12 processing work on the removal of fines from our</p> <p>13 baby powder since this is the faction implicated in</p> <p>14 talcosis and asbestos toxicology."</p> <p>15 This is the one, this is the one where you</p> <p>16 were asked does the word asbestos appear.</p> <p>17 Do you remember that?</p> <p>18 A. Yes.</p> <p>19 Q. And the word asbestos appears. We can</p> <p>20 agree on that; sure?</p> <p>21 A. Adjacent to the word asbestos toxicology,</p> <p>22 yes.</p> <p>23 Q. And the asbestos toxicology, when they're</p> <p>24 talking about this is the faction implicated, is</p> <p>25 fines from our baby powder, correct?</p>	<p style="text-align: right;">Page 125</p> <p>1 industrial talcs.</p> <p>2 Q. Are we talking about industrial talcs?</p> <p>3 A. No, but that's --</p> <p>4 Q. Can we agree those words appear in that</p> <p>5 sentence?</p> <p>6 A. The words appear.</p> <p>7 Q. Do the words baby powder appear?</p> <p>8 A. The word baby powder appears and the word</p> <p>9 asbestos toxicology.</p> <p>10 Q. You knew I was going there.</p> <p>11 Okay. So we can agree on that; fair?</p> <p>12 A. Yes.</p> <p>13 Q. The next, one of the other documents you</p> <p>14 were asked about was Plaintiffs' Exhibit 2398, the</p> <p>15 Italian medicated and Grantham talc document.</p> <p>16 You recall that?</p> <p>17 A. Yes.</p> <p>18 Q. And one of the questions was asked, do you</p> <p>19 know if the plaintiffs in this case used the</p> <p>20 medicated powder.</p> <p>21 The medicated powder used the same sources</p> <p>22 as the baby powder, correct?</p> <p>23 A. The talc source.</p> <p>24 Q. Yes.</p> <p>25 A. Yes.</p>

<p style="text-align: right;">Page 126</p> <p>1 Q. Okay.</p> <p>2 A. Yes.</p> <p>3 Q. And so if there was a finding of asbestos</p> <p>4 in the medicated powder, it would be the same source</p> <p>5 being used in the baby powder, correct?</p> <p>6 A. Well, they were using the same talc, yes.</p> <p>7 Q. And, sir, you're aware, if we go to the</p> <p>8 second to the last page, that they did find asbestos</p> <p>9 in Shower to Shower, and they say it's possibly</p> <p>10 contamination, right?</p> <p>11 A. Yes. You've got background contamination</p> <p>12 occasionally, yes.</p> <p>13 Q. But that's not what they were talking</p> <p>14 about there. They were talking about an additive to</p> <p>15 Shower to Shower called G-11.</p> <p>16 Do you recall that?</p> <p>17 A. I'm familiar with G-11. Yes.</p> <p>18 Q. But G-11 hadn't been used in the product</p> <p>19 for three years by that point. Isn't that true?</p> <p>20 A. It had not been used since 1968.</p> <p>21 Q. You were also asked about this document,</p> <p>22 where I believe it's Bill Ashton. This is dated</p> <p>23 August 6, '71. There he is. Bill Ashton.</p> <p>24 And he says he's shipped one drum of</p> <p>25 Italian rock from the Crosetto mine in the Chisone</p>	<p style="text-align: right;">Page 128</p> <p>1 MR. PANATIER: Okay. The copy I got doesn't</p> <p>2 say, but it's 1048.</p> <p>3 THE COURT: Thank you very much, counsel.</p> <p>4 MR. PANATIER: So, and we could just finish</p> <p>5 with this document, your Honor.</p> <p>6 THE COURT: Sure. I'm sorry. What's the</p> <p>7 marking on this, for the record?</p> <p>8 MR. PANATIER: This one is 3314. There you</p> <p>9 go, sir.</p> <p>10 A. Yep.</p> <p>11 MR. PANATIER: Offer this in evidence, your</p> <p>12 Honor.</p> <p>13 MS. SULLIVAN: Your Honor, can we have a</p> <p>14 sidebar?</p> <p>15 THE COURT: Sure.</p> <p>16 (Sidebar.)</p> <p>17 MS. SULLIVAN: You might want to use this is</p> <p>18 not objectionable. I think it's objectionable to put</p> <p>19 on the labor issues they're having.</p> <p>20 MR. PANATIER: If that becomes an issue</p> <p>21 later, we can agree to redact anything that --</p> <p>22 MS. SULLIVAN: Can you tell me what --</p> <p>23 MR. PANATIER: Just section 5, processing and</p> <p>24 controls.</p> <p>25 THE COURT: It's not even on the same page,</p>
<p style="text-align: right;">Page 127</p> <p>1 Valley?</p> <p>2 A. Yes.</p> <p>3 Q. Now, look, as someone who is trained as a</p> <p>4 scientist, you agree it's important to be specific</p> <p>5 and accurate in what you represent, correct?</p> <p>6 A. Absolutely. Yes.</p> <p>7 Q. And what you said was well, we were</p> <p>8 getting our talc from the Fontana mine, right?</p> <p>9 A. And that is correct.</p> <p>10 Q. And this was, they were talking about</p> <p>11 Crosetto, right?</p> <p>12 A. Yes.</p> <p>13 Q. This is Plaintiffs' Exhibit 3314 --</p> <p>14 THE COURT: Before you go to 3314, what's</p> <p>15 the marking on this one that's on the screen?</p> <p>16 MR. PANATIER: Sure. Sure. This one, this</p> <p>17 one doesn't have an exhibit number. It's August 6,</p> <p>18 1971.</p> <p>19 THE COURT: For purposes of the record, we</p> <p>20 need to create one.</p> <p>21 MR. PANATIER: Yeah. 3695-100.</p> <p>22 MS. SULLIVAN: It says Plaintiff's Exhibit</p> <p>23 1048.</p> <p>24 THE COURT: Thank you.</p> <p>25 MS. SULLIVAN: At least on my copy.</p>	<p style="text-align: right;">Page 129</p> <p>1 but for purposes of the document before it goes in,</p> <p>2 just --</p> <p>3 MS. SULLIVAN: Let me see section 5, your</p> <p>4 Honor.</p> <p>5 THE COURT: Sure.</p> <p>6 MS. SULLIVAN: It's 6035?</p> <p>7 MR. PANATIER: Um-hum.</p> <p>8 MS. SULLIVAN: No objection.</p> <p>9 THE COURT: Go ahead.</p> <p>10 (Sidebar ends.)</p> <p>11 THE COURT: Admitted, subject to the court's</p> <p>12 ruling.</p> <p>13 (Plaintiff's Exhibit 6035 was moved into</p> <p>14 evidence.)</p> <p>15 BY MR. PANATIER:</p> <p>16 Q. I see at the top this says it was July 15,</p> <p>17 1966, right?</p> <p>18 A. Yes.</p> <p>19 Q. "Review of the Italian Talc Source Societa</p> <p>20 Talco e Grafite Val Chisone," right?</p> <p>21 A. Yes.</p> <p>22 Q. You know that Crosetto is in Val Chisone,</p> <p>23 right?</p> <p>24 A. As we've seen from the previous exhibit.</p> <p>25 Q. And you know Fontana is in Val Chisone?</p>

<p style="text-align: right;">Page 130</p> <p>1 A. Yes. It's a whole valley.</p> <p>2 Q. Do you know, in fact, that Fontana and</p> <p>3 Crosetto are different divisions of the same mine,</p> <p>4 they're two holes for the same deposit?</p> <p>5 A. I'm not familiar with the geology.</p> <p>6 Q. Turn, if you will, to page 5 of the</p> <p>7 document I've handed you, sir. Section 5.</p> <p>8 You see where it says, "The company</p> <p>9 currently recovers talc suitable for the preparation</p> <p>10 of cosmetic product from two mines, Fontana and</p> <p>11 Crosetto" --</p> <p>12 A. Yeah.</p> <p>13 Q. -- "which are developed on a single</p> <p>14 mineralized zone."</p> <p>15 Did I read that right?</p> <p>16 A. Yes. That's a geological phrase.</p> <p>17 Q. But what you said, sir, with counsel, was</p> <p>18 basically this document, because it dealt with</p> <p>19 Crosetto, didn't have anything to do with Johnson &</p> <p>20 Johnson; but it does, doesn't it?</p> <p>21 A. I refute that. Johnson & Johnson's product</p> <p>22 was taken from the Fontana mine and they, the one in</p> <p>23 question we looked at was from the Crosetto mine.</p> <p>24 Q. Right. And they say --</p> <p>25 A. They actually say preparation of products</p>	<p style="text-align: right;">Page 132</p> <p>1 Q. Have you found that under introduction?</p> <p>2 A. Yes.</p> <p>3 Q. Okay.</p> <p>4 And if I can, your Honor, I'd just like to</p> <p>5 show the second paragraph.</p> <p>6 THE COURT: That's fine.</p> <p>7 MR. PANATIER: Thank you, your Honor.</p> <p>8 BY MR. PANATIER:</p> <p>9 Q. Do you see, sir, where it says, "Today</p> <p>10 Fontane mine is the Italy's leading talc mine. Its</p> <p>11 output, about 40,000 tons per year, and quality</p> <p>12 level, 80 percent pure cosmetic talc, also make it</p> <p>13 one of the most important in Europe.</p> <p>14 "It consists of two distinct sections,</p> <p>15 Gianna and Crosetto, which lie on the left and the</p> <p>16 right of the Germanasca Stream, respectively."</p> <p>17 Correct?</p> <p>18 A. Yes. They're separated by the river.</p> <p>19 Q. And what you said is that Johnson &</p> <p>20 Johnson got all their talc from the Fontane mine,</p> <p>21 right?</p> <p>22 A. That is correct.</p> <p>23 Q. And you said I would need to see something</p> <p>24 geological, right?</p> <p>25 A. Yes.</p>
<p style="text-align: right;">Page 131</p> <p>1 from two mines.</p> <p>2 Q. Right. And where does it say the company</p> <p>3 recovers the talc from; Fontana and Crosetto,</p> <p>4 correct?</p> <p>5 A. Yeah. Two mines. Yes.</p> <p>6 Q. Okay. And that's the talc that Johnson &</p> <p>7 Johnson was using in its products, correct?</p> <p>8 A. Just the Fontana mine, correct.</p> <p>9 Q. You're aware, sir, they are divisions of</p> <p>10 the exact same hole in the ground?</p> <p>11 A. I don't believe you can read that from</p> <p>12 what's written here. It describes them from a single</p> <p>13 mineralized zone, and a mineralized zone is</p> <p>14 constructed for many miles. Without seeing the</p> <p>15 geology, we can't conclude that.</p> <p>16 Q. No problem.</p> <p>17 This is Exhibit 875. I have an article</p> <p>18 entitled, Geology of the Italian High Quality</p> <p>19 Cosmetic Talc from the Pinerolo District.</p> <p>20 You see that?</p> <p>21 A. I do, yes.</p> <p>22 Q. And I would just like to ask you a</p> <p>23 question, if you can, just turn to page 106, sir.</p> <p>24 It's at the top, 106.</p> <p>25 A. Okay. Yep.</p>	<p style="text-align: right;">Page 133</p> <p>1 Q. I've handed you an article where the first</p> <p>2 word is geology, correct?</p> <p>3 A. Yes.</p> <p>4 Q. Okay. And this says that the mine has two</p> <p>5 sections, Gianna and Crosetto, the Fontane mine,</p> <p>6 correct?</p> <p>7 A. Which if you go on to say they lie to the</p> <p>8 left and the right of the Germanasca Stream, the</p> <p>9 river. So they are separate, correct.</p> <p>10 Q. They are one mine, sir. There's a stream</p> <p>11 going down the middle, correct?</p> <p>12 A. They can't be one mine if they're separated</p> <p>13 by the stream.</p> <p>14 You know, again, we need to have an expert</p> <p>15 geologist. But the understanding from that is that</p> <p>16 they are separate and they use that description</p> <p>17 themselves, two distinct sections.</p> <p>18 Q. Sir, this geological paper says there is</p> <p>19 something called the Fontane mine, right?</p> <p>20 A. Yes.</p> <p>21 Q. And it says it has two sections, right,</p> <p>22 the mine, correct, does it?</p> <p>23 A. The Fontana mine is Italy's leading</p> <p>24 production. It consists of two distinct sections.</p> <p>25 Q. Gianna and --</p>

<p style="text-align: right;">Page 134</p> <p>1 A. Crosetto.</p> <p>2 Q. In one mine, correct?</p> <p>3 A. It actually says in the earlier report there</p> <p>4 were two mines, Fontana mine and Crosetto mine.</p> <p>5 Q. You understand that a mine can have more</p> <p>6 than one hole dug into it.</p> <p>7 You understand that, right?</p> <p>8 A. It depends on the separation of the two. A</p> <p>9 mine, if you have one hole then that's it, but if the</p> <p>10 other mine pit is several miles away or several</p> <p>11 hundred yards away, its geology could well be totally</p> <p>12 different.</p> <p>13 Q. And, sir, you just asked me to show you</p> <p>14 what a geologist said about it.</p> <p>15 A. Yes.</p> <p>16 Q. And I've shown that to you, haven't I?</p> <p>17 A. Yes.</p> <p>18 MR. PANATIER: Your Honor, good time for</p> <p>19 lunch?</p> <p>20 THE COURT: Yes.</p> <p>21 Members of the jury, it's time for the lunch</p> <p>22 break. Please leave your notebooks here.</p> <p>23 Remember the instructions. Wear your juror</p> <p>24 badges where they are visible.</p> <p>25 Remember all the instructions I've provided</p>	<p style="text-align: right;">Page 136</p> <p>1 AFTERNOON SESSION</p> <p>2 COURT OFFICER: Jury entering.</p> <p>3 (Jury enters.)</p> <p>4 THE COURT: Please be seated. Make sure cell</p> <p>5 phones are turned off.</p> <p>6 Mr. Panatier, you may continue.</p> <p>7 MR. PANATIER: Thank you, your Honor. Good</p> <p>8 afternoon.</p> <p>9 BY MR. PANATIER:</p> <p>10 Q. Good afternoon, Dr. Hopkins.</p> <p>11 A. Good afternoon.</p> <p>12 Q. I was thinking, so we had this</p> <p>13 conversation about Crosetto, Fontana and so forth.</p> <p>14 I'm sure you recall that.</p> <p>15 A. Yes.</p> <p>16 Q. And you said there was a stream dividing</p> <p>17 the two?</p> <p>18 A. Yes. It's on the map.</p> <p>19 Q. You're not saying the stream prevented</p> <p>20 them from mining underneath that, right?</p> <p>21 A. I'm not a miner. I'm just saying that the</p> <p>22 two are physically geographically separated and</p> <p>23 there's a stream between the two.</p> <p>24 Q. Okay. So you have traveled here from</p> <p>25 England, right?</p>
<p style="text-align: right;">Page 135</p> <p>1 to you. No discussions with regard to this case,</p> <p>2 including the testimony you've just heard.</p> <p>3 Enjoy your lunch. Be ready to come back</p> <p>4 upstairs at 1:35. Thank you.</p> <p>5 (Jury exits.)</p> <p>6 (There is a discussion off the record.)</p> <p>7 THE COURT: Off the record.</p> <p>8 (Luncheon recess taken from 12:34 p.m. to</p> <p>9 1:52 p.m.)</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>	<p style="text-align: right;">Page 137</p> <p>1 A. Um-hum. Yes.</p> <p>2 Q. And if you want to go to France, you drive</p> <p>3 under the English Channel, right?</p> <p>4 A. You can do that.</p> <p>5 Q. So you can go under bodies of water?</p> <p>6 A. Yes.</p> <p>7 Q. English Channel is a lot bigger than a</p> <p>8 stream, is it not?</p> <p>9 A. Yes. Yes.</p> <p>10 Q. So you were asked about this document.</p> <p>11 This one is the Johns-Manville document. I don't</p> <p>12 know if it had a defense exhibit number on it. It's</p> <p>13 August 28, 1973.</p> <p>14 THE COURT: I'm sorry, what was --</p> <p>15 MR. PANATIER: August 28, 1973.</p> <p>16 THE COURT: I thought Mr. Nolan had the</p> <p>17 exhibit number.</p> <p>18 MR. PANATIER: The copy I got did not have</p> <p>19 one.</p> <p>20 MR. NOLAN: It's P-10556.</p> <p>21 THE COURT: Thank you.</p> <p>22 BY MR. PANATIER:</p> <p>23 Q. Now, Johns-Manville was an asbestos</p> <p>24 company, right?</p> <p>25 A. I'm sorry. Do you have the document?</p>

<p style="text-align: right;">Page 138</p> <p>1 Q. I've put it up here. I was given a copy 2 by the defense, so I'm using that copy to put it up 3 there. I don't have an extra copy. 4 A. That's fine. 5 MR. NOLAN: May I approach, your Honor? 6 THE COURT: Do you have a copy for 7 Dr. Hopkins? 8 MR. NOLAN: Yes. 9 THE COURT: Thank you, Mr. Nolan. 10 A. Thank you. 11 Q. This will happen a few times 'cause I'm 12 questioning based on documents that were just handed 13 to me. 14 A. Okay. 15 Q. So I haven't had time to photocopy them 16 all. 17 But Johns-Manville, that was an asbestos 18 company, right? 19 A. I believe that was part of their operation, 20 yes. The asbestos business. 21 Q. You understand historically they were the 22 world's biggest asbestos company? 23 A. I understand they were an asbestos company. 24 I don't know... 25 Q. And you would presume that Johns-Manville</p>	<p style="text-align: right;">Page 140</p> <p>1 Johnson did an estimate of exposure at just ten 2 parts per million. 3 Do you recall that? 4 A. Yes. 5 Q. Okay. All right. Let's go to the next 6 page. Under C. They say, "The only samples which 7 contain chrysotile believed to be part of the 8 mineralogical system at this stage of the study 9 are," and they list Italian cosmetic talc, correct? 10 A. Yeah. You read what was written. 11 Q. Okay. On the next page they have, the 12 Johnson & Johnson at approximately 1,000 parts per 13 million, and then the Italian cosmetic at 3,000 14 parts per million. And that's chrysotile, correct? 15 A. Yes. It's under the heading of chrysotile. 16 Q. And, of course, Johnson & Johnson, their 17 people went and met -- went and met with JM and they 18 disagreed with JM's findings, right? 19 A. Yes. 20 Q. They regularly did that; if someone 21 reported asbestos, Johnson & Johnson would often go 22 meet with them and then report that they disagreed 23 with the results. 24 Is that fair? 25 MS. SULLIVAN: Objection. Argument.</p>
<p style="text-align: right;">Page 139</p> <p>1 knew asbestos when they saw it, wouldn't you? 2 A. I don't know. I wouldn't presume. I mean, 3 we're looking at 1973. 4 Q. Okay. Do you know that they had been in 5 business by then by decades and they mined 6 specifically chrysotile in Canada? 7 A. No. I'm not familiar with Johns-Manville. 8 I know them only as a company that was mining asbestos 9 and -- 10 Q. I'm sorry. You know that they were doing 11 transmission electron microscopy of commercial talc, 12 right? 13 A. Well, they apparently were in 1973. Yes. 14 Q. And you could see that they did not detect 15 it in a series of them, under section A and then 16 under B, it says, "If the chrysotile content was 17 determined to be 1,000 parts per million or less, 18 the chrysotile at this stage of the study has to be 19 considered a contaminant." Right? 20 A. Yes. 21 Q. And they say, "Johnson & Johnson Baby 22 Powder," correct? 23 A. That's what is written. Yes. 24 Q. Now, in one of the documents that we've 25 looked at, and we'll look at it again, Johnson &</p>	<p style="text-align: right;">Page 141</p> <p>1 THE COURT: Sustained. Please rephrase. 2 BY MR. PANATIER: 3 Q. Was it Johnson & Johnson's practice to 4 meet with people who reported asbestos in their 5 talc, first of all? 6 A. If anyone found or claimed to have found 7 asbestos, then the company would take that very 8 seriously and go to try and understand how they came 9 to that conclusion. 10 Q. Someone -- 11 A. Required a meeting, yes. 12 Q. Someone else that reported chrysotile 13 asbestos in the talc was Societa Talco e Grafiti, 14 Val -- my Italian is not very good. 15 A. Val Chisone. 16 Q. Val Chisone? 17 A. Yeah. 18 Q. And this is Defense Exhibit 7835. It's up 19 there on the board, sir, right? 20 A. Yes. 21 Q. You're very familiar with this document? 22 A. Yes. 23 Q. And here they state, "The talc impurities 24 may be classified as follows: The very hard 25 silicates as chrysotiles and tremolites of</p>

<p style="text-align: right;">Page 142</p> <p>1 amphibolitic derivation; namely, with strict 2 asbestos content." Right? 3 A. That's what the son of the owner wrote in 4 his little pamphlet. Yes. 5 Q. Yes. 6 The owner of the mine wrote that? 7 A. The son of the owner of the mine, yes. 8 Q. And they describe these as very hard 9 silicates; true? 10 A. That's what the son wrote in the Italian 11 version, yes. 12 Q. And they profiled the talc coming out of 13 their mine, correct? 14 A. Yes. 15 Q. And they describe trace hard silicates, 16 correct? 17 A. He describes trace when that's translated in 18 that paragraph, yes. 19 Q. And you and Miss Sullivan showed us this 20 document, Defense 7834, which was a personal and 21 confidential document regarding a meeting where 22 Johnson & Johnson then went and actually met with 23 Mr. Gianfranco Villa, the son of the owner, right? 24 A. Yes. 25 Q. And there, according to this memo, and I</p>	<p style="text-align: right;">Page 144</p> <p>1 A. There were other issues that related to 2 translation other than the word trace. 3 Q. Let's see what the Italians say trace 4 means. This will be Plaintiffs' Exhibit 2544. 5 Here you go, your Honor. Here you go, 6 sir. 7 I've shown you this document before, 8 haven't I? 9 MS. SULLIVAN: Your Honor, I'm going to 10 object as cumulative. Counsel has already questioned 11 this witness about this. 12 MR. PANATIER: I haven't questioned about 13 this document at all. 14 MS. SULLIVAN: It's in evidence. It's been 15 asked about. 16 MR. PANATIER: It's in evidence not by -- 17 THE COURT: Excuse me. Objection overruled. 18 Proceed. 19 MR. PANATIER: I'm sorry. 20 BY MR. PANATIER: 21 Q. You see this, this is a, is this a 22 telegram or a telex? 23 A. Could be. Yeah. Could be a telegram. 24 Q. 19, looks like it's 8/17. Does that tell 25 us the date?</p>
<p style="text-align: right;">Page 143</p> <p>1 think it looks like Bill Ashton, right? He wrote 2 this, right? 3 A. He did. 4 Q. Okay. You showed us this. 5 "Villa explained that in Italian, a trace 6 of something such as chrysotile actually means none 7 at all could be found." Right? 8 A. That's what is written, yes. 9 Q. "Decisions reached, having obtained 10 Mr. Villa's agreement that his booklet needed a 11 rewrite." 12 This isn't the first time we've seen 13 Johnson & Johnson discussing rewriting something in 14 Italian? 15 MS. SULLIVAN: Objection. Argument. 16 THE COURT: Overruled. You can answer. 17 A. In the context of translation, remember the 18 book is written in Italian, and it was concluded that 19 the translation wasn't good enough. 20 Q. We just showed the jury an English one 21 that said chrysotile, sir. 22 A. You did. And that was a bad translation. 23 That was the whole point. 24 Q. The whole point was a bad translation with 25 regard to the word trace?</p>	<p style="text-align: right;">Page 145</p> <p>1 A. No. It wouldn't be 17. I don't know. May 2 not be a date. 3 Q. Either way, it discusses a visit with 4 Johnson & Johnson, right? 5 A. Yes. 6 Q. It says, "Regarding our visit to 7 Portsmouth requested by Johnson yesterday and today, 8 we have had the visit of Mr. William H. Ashton, 9 Director of the Research Division of Johnson & 10 Johnson, U.S.A. 11 "We have discussed the contents of 12 tremolite in our talc. In our booklet we speak of 13 traces. By this word we mean a few parts per 14 million, whilst the Americans by this word mean a 15 percentage till two percent." 16 So, sir, what Mr. Ashton wrote down was 17 that when the Italians say trace they mean zero, but 18 that's not what the Italians say, is it? They say 19 it means a few parts per million, correct? 20 A. I don't know who this author was of this 21 telex or telegram, but somebody called Rudier LDNO, 22 but someone has written this relating to Val Chisone. 23 So this person has made another statement as to what 24 trace means. 25 Q. And this person, you see this? Talco SVC?</p>

<p style="text-align: right;">Page 146</p> <p>1 A. Yes.</p> <p>2 Q. Societa Val Chisone?</p> <p>3 A. Yes. But I don't know the ability for</p> <p>4 someone called Rudier LDNO to translate what he means.</p> <p>5 It's yet another definition of what they mean by</p> <p>6 trace.</p> <p>7 Q. Dr. Hopkins --</p> <p>8 A. The document speaks, says what it says.</p> <p>9 Q. This is the only definition we have from</p> <p>10 the Italians as to what they mean by trace because</p> <p>11 Mr. Ashton is the person who wrote the previous memo</p> <p>12 who said trace means zero, right?</p> <p>13 A. That's what he wrote based on the meeting he</p> <p>14 had with the people in Italy.</p> <p>15 Q. Finishing the Ashton memo, it says,</p> <p>16 "Mr. Villa will stop the distribution on his booklet</p> <p>17 in England and to any English-speaking countries</p> <p>18 after their meeting," right?</p> <p>19 A. On that translated version, yes.</p> <p>20 Q. "Mr. Ferry will not release" -- now,</p> <p>21 Mr. Ferry was the importer of Italian talc in the</p> <p>22 U.S.; true?</p> <p>23 A. Yes.</p> <p>24 Q. -- "will not release any copies in the</p> <p>25 U.S.A., and Villa now understands why he delayed</p>	<p style="text-align: right;">Page 148</p> <p>1 THE COURT: Objection sustained. The jury</p> <p>2 will disregard.</p> <p>3 BY MR. PANATIER:</p> <p>4 Q. As long as it didn't include the word</p> <p>5 chrysotile; correct, sir?</p> <p>6 A. I can't speculate on what a rewrite or</p> <p>7 translation would have included.</p> <p>8 Q. So you discussed some of these boards, and</p> <p>9 thankfully it was only copies that were marked</p> <p>10 out so we could still read them, but --</p> <p>11 MS. SULLIVAN: Objection, your Honor, to the</p> <p>12 word marked.</p> <p>13 THE COURT: There was no reason for that</p> <p>14 comment.</p> <p>15 MR. PANATIER: Sure.</p> <p>16 BY MR. PANATIER:</p> <p>17 Q. So the boards, you already said what we</p> <p>18 reported on the boards was accurate for what the</p> <p>19 documents state, right?</p> <p>20 A. Yes. Where you've written the word</p> <p>21 tremolite, the word tremolite, et cetera.</p> <p>22 Q. And the reason I bring up marking them out</p> <p>23 is because we know, and this is Plaintiffs' Exhibit</p> <p>24 3173 in evidence, we talked about the Interrogatory</p> <p>25 answers that Miss Musco signed, correct?</p>
<p style="text-align: right;">Page 147</p> <p>1 until now.</p> <p>2 "Three, it is up to Mr. Ferry and me to</p> <p>3 carry through with how we will revise, rewrite and</p> <p>4 rearrange the SVC publication for maximum benefit to</p> <p>5 all concerned." Right?</p> <p>6 A. Yes.</p> <p>7 Q. Mr. Ashton isn't saying me and Mr. Ferry,</p> <p>8 because we know Italian, are going to kindly</p> <p>9 translate this. They're going to rewrite it.</p> <p>10 That's what it says, right?</p> <p>11 MS. SULLIVAN: Objection. Lawyer argument.</p> <p>12 THE COURT: Objection overruled.</p> <p>13 You can answer.</p> <p>14 A. The document states what it states.</p> <p>15 Q. And it states what I stated, right? They</p> <p>16 aren't translating it, they're rewriting it for</p> <p>17 maximum benefit to all concerned, right?</p> <p>18 A. That was the whole point of the document, to</p> <p>19 tell the story of Italian talc.</p> <p>20 Q. As long as it didn't include the word</p> <p>21 chrysotile, right?</p> <p>22 A. But we know from innumerable examinations</p> <p>23 that there was no chrysotile in the Italian talc.</p> <p>24 MR. PANATIER: Objection. Non-responsive,</p> <p>25 your Honor.</p>	<p style="text-align: right;">Page 149</p> <p>1 A. Yes.</p> <p>2 MS. SULLIVAN: Your Honor, objection.</p> <p>3 Cumulative. This has been covered with Dr. Hopkins at</p> <p>4 length.</p> <p>5 THE COURT: This is redirect.</p> <p>6 MS. SULLIVAN: It was already covered.</p> <p>7 THE COURT: Objection overruled.</p> <p>8 You can answer. You can ask the question on</p> <p>9 the document.</p> <p>10 BY MR. PANATIER:</p> <p>11 Q. And we know that Miss Musco answered these</p> <p>12 under oath and with assistance of Johnson & Johnson</p> <p>13 counsel, correct?</p> <p>14 A. I believe that's correct.</p> <p>15 Q. We also know that as of 2000, Johnson &</p> <p>16 Johnson had not turned over any of those studies</p> <p>17 reflecting tremolite, the Battelle studies, to</p> <p>18 anybody in litigation, correct?</p> <p>19 A. I'm not aware of the dates of when they were</p> <p>20 made available. I really do not know.</p> <p>21 Q. You know they weren't made available by</p> <p>22 5/23/2000, correct?</p> <p>23 A. No. You'd need to explain to me why that</p> <p>24 would be the case.</p> <p>25 Q. Well, you're the company, so I'm asking</p>

<p style="text-align: right;">Page 150</p> <p>1 you when did Johnson & Johnson give these documents 2 over in litigation? 3 A. Oh, I see. I don't know. 4 Q. And we know that with assistance of 5 counsel, this person for Johnson & Johnson said 6 under oath that there was no tremolite or any other 7 contaminants, tremolite asbestos or other 8 contaminants in Johnson & Johnson's Baby Powder, 9 correct? 10 A. That's what she wrote. 11 Q. With the -- 12 A. I can speculate, but I'm not going to as to 13 what she meant. 14 Q. You're not saying that that's in any way 15 unambiguous, are you, or ambiguous? It's pretty 16 unambiguous, right? 17 A. What is written is unambiguous, but 18 Miss Musco was not experienced in geology or 19 mineralogy. 20 Q. So when Johnson & Johnson chose someone to 21 answer these questions under oath, they chose 22 someone who had no experience, right? 23 A. Well, it's not a case of no experience. 24 Miss Musco's qualifications, she was, maybe still is, 25 a registered nurse, and her background in the company</p>	<p style="text-align: right;">Page 152</p> <p>1 asbestos. 2 Q. Well, then that would have been 3 repetitive, because it already said never contained 4 asbestos in any form, right? 5 A. That is what is written. It's not clarified 6 she -- what was meant was tremolite asbestos. There's 7 no tremolite asbestos. 8 Q. You don't know what she meant. You're not 9 a mind reader. 10 A. I am not a mind reader, but -- 11 MS. SULLIVAN: Objection, your Honor. 12 THE COURT: Don't argue with the witness. 13 BY MR. PANATIER: 14 Q. Sir, you have no idea what she meant other 15 than what she wrote, correct? 16 MS. SULLIVAN: Objection. Asked and 17 answered. 18 THE COURT: Overruled. Please answer. 19 A. I don't know what she meant, but I know what 20 the reality is and the reality is that she should have 21 used the word tremolite asbestos. 22 Q. That would have just been redundant, 23 correct? 24 A. Grammatically, yes, but it would have also 25 enabled a bit more clarification.</p>
<p style="text-align: right;">Page 151</p> <p>1 was the interface with consumers who had questions. 2 So she wasn't exactly stupid. But we look and hear 3 semantics, differences between tremolite, tremolite 4 asbestos. 5 Q. Well -- 6 A. That was not made clear. 7 Q. -- there's no semantics between saying 8 it's there and it's not there. Those are two 9 completely diametrically opposed opposite things, 10 correct? 11 A. Correct. And what she wrote was not the 12 full story. 13 Q. It was not the full story. 14 In fact, it was an untrue story, correct? 15 A. No. She just missed a word out. 16 Q. Okay. So Miss Musco and the lawyers that 17 were helping her, they all just missed a word. Is 18 that fair? 19 A. A word was omitted. Yes. 20 Q. And the word should have been, what's the 21 word? You tell me the word they wanted omitted. I 22 don't want to figure it out. You said there was one 23 word they omitted, so what word should be there? 24 A. Tremolite asbestos. After the word 25 tremolite, it should have defined it as tremolite</p>	<p style="text-align: right;">Page 153</p> <p>1 Q. Well, the problem is this was what was 2 represented in a lawsuit, correct? 3 A. I believe so. 4 Q. And we know the statements to be utterly 5 false that there was no tremolite, right? 6 MS. SULLIVAN: Objection. Argument. 7 THE COURT: Overruled. 8 You can answer. 9 A. It would be incorrect to say there was no 10 tremolite. There is tremolite, but not tremolite 11 asbestos. 12 Q. In fact, one of the things that you guys 13 discussed was that it was no secret that there was 14 tremolite, actinolite, anthophyllite, the mineral, 15 right? We'll get to asbestos, but the mineral in 16 the baby powder, right? 17 A. Yes. 18 Q. So it's there in the baby powder. 19 When you look at a bottle of Johnson & 20 Johnson, what does it say the ingredients are? 21 A. Ingredient is talc plus fragrance. 22 Q. Two ingredients, talc and fragrance, 23 right? 24 A. Yes. 25 Q. It doesn't say may contain tremolite, does</p>

<p style="text-align: right;">Page 154</p> <p>1 it?</p> <p>2 A. No.</p> <p>3 Q. It doesn't say may contain actinolite or</p> <p>4 anthophyllite, does it?</p> <p>5 A. No.</p> <p>6 Q. But it does, correct?</p> <p>7 A. It may in some cases contain a few rods of</p> <p>8 tremolite, which is part of the way it's mined out of</p> <p>9 the ground.</p> <p>10 Q. And you drew for us what a rod was,</p> <p>11 correct?</p> <p>12 A. I drew a rod. Yes.</p> <p>13 Q. And it looks something like this, right?</p> <p>14 A. That's not exactly how I drew it, but a rod</p> <p>15 -- a geologist or mineralogist will define a rod --</p> <p>16 Q. Go ahead. You could finish.</p> <p>17 A. -- a rod as having the shape like my pen.</p> <p>18 It'll have a rod shape. Looks like that.</p> <p>19 Yes. Something like that. It'll look like</p> <p>20 that.</p> <p>21 Q. Does Johnson & Johnson agree that its</p> <p>22 customers and consumers should be able to make</p> <p>23 informed decisions about what they purchase to put</p> <p>24 on their bodies and the bodies of their children?</p> <p>25 A. Yes.</p>	<p style="text-align: right;">Page 156</p> <p>1 chrysotile, fibrous structures, in Vermont talc, yes,</p> <p>2 tremolite.</p> <p>3 Q. Yeah.</p> <p>4 Now, if there's just plain old tremolite,</p> <p>5 right, non-fibrous tremolite, plain old tremolite,</p> <p>6 it's Johnson & Johnson's position there's nothing</p> <p>7 wrong with that, that's fine, you're going to expect</p> <p>8 some of that, right?</p> <p>9 A. Yes.</p> <p>10 Q. You wouldn't set out to try and destroy</p> <p>11 it, would you, because there's no problem?</p> <p>12 A. As I said before, 80 percent of the</p> <p>13 company's business was in industrial talcs, and if you</p> <p>14 could make any purer industrial talc you could use</p> <p>15 other sources, other mines.</p> <p>16 Q. There's nothing that says this is</p> <p>17 industrial talc, is there?</p> <p>18 A. No. It's an experiment.</p> <p>19 Q. Let's look at the letterhead. Does that</p> <p>20 say industrial products company or does that say</p> <p>21 Baby Products Company?</p> <p>22 A. The company never had an industrial product</p> <p>23 company. It was just a Baby Products Company at</p> <p>24 Johnson & Johnson.</p> <p>25 Q. For a long time the Baby Products Company</p>
<p style="text-align: right;">Page 155</p> <p>1 Q. Yet nothing has ever been on the label</p> <p>2 about these minerals, tremolite, actinolite,</p> <p>3 anthophyllite or chrysotile, correct?</p> <p>4 MS. SULLIVAN: Asked and answered.</p> <p>5 Objection.</p> <p>6 THE COURT: Overruled.</p> <p>7 You can answer.</p> <p>8 A. That's correct. The product contains talc</p> <p>9 and fragrance.</p> <p>10 Q. This is from your redirect examination, or</p> <p>11 cross, Plaintiffs' Exhibit 2523.</p> <p>12 You were shown this document, sir, about</p> <p>13 Colorado School of Mines, and they were asked to</p> <p>14 determine whether or not they could destroy the</p> <p>15 fibrous structure of chrysotile and tremolite in the</p> <p>16 Vermont talc, correct?</p> <p>17 A. That was the proposed experiment, yes.</p> <p>18 Q. And they said let's run it on low key up</p> <p>19 to the point where we can file patent protection,</p> <p>20 right?</p> <p>21 A. Yes.</p> <p>22 Q. They actually reference Vermont talc and</p> <p>23 chrysotile and fibrous tremolite, correct?</p> <p>24 A. That proposal, that experimental proposal</p> <p>25 does talk about can we destroy tremolite -- sorry,</p>	<p style="text-align: right;">Page 157</p> <p>1 was just a division of the overall company. Isn't</p> <p>2 that true?</p> <p>3 A. Yes.</p> <p>4 Q. In fact, until 1978 the Baby Products</p> <p>5 Company is the one, the division that made the baby</p> <p>6 powder and sold the baby powder, correct?</p> <p>7 A. The baby powder division was Baby Products</p> <p>8 Company, yes.</p> <p>9 Q. That was a division of Johnson & Johnson,</p> <p>10 not a separate company, correct?</p> <p>11 A. Yes.</p> <p>12 Q. After 1978, the Baby Products Company</p> <p>13 became a subsidiary of Johnson & Johnson; true?</p> <p>14 A. Yes.</p> <p>15 Q. And that's what later, through different</p> <p>16 name changes, became Johnson & Johnson Consumer</p> <p>17 Inc., or JJCI, correct?</p> <p>18 A. Yes.</p> <p>19 Q. This has nothing to do with industrial</p> <p>20 talc, does it?</p> <p>21 A. The people doing experiments were the same</p> <p>22 people involved with working with Windsor Minerals, to</p> <p>23 look at their talcs.</p> <p>24 Q. Okay. Here's the question: This document</p> <p>25 about destroying chrysotile and tremolite in the</p>

<p style="text-align: right;">Page 158</p> <p>1 talc, the Baby Products Company -- from the Baby 2 Products Company has nothing to do with industrial 3 talc, does it? 4 A. It doesn't say it has anything to do with 5 industrial talc. But as I've said, it would certainly 6 relate to industrial talc if you were successful in 7 that experiment. 8 Q. 'Cause maybe you could do it in industrial 9 talc, too? 10 A. Or you could buy an industrial mine that 11 wasn't good enough until you destroyed it, separate 12 mine. 13 Q. But the truth is, Johnson & Johnson never 14 made any efforts to get asbestos out of their 15 industrial talc, did they? 16 A. That was -- that was typical of the kind of 17 studies you would do to say if you purchased, and 18 we've seen this morning where the company is looking 19 at something like 50 different mines. If you purchase 20 an industrial mine, could you remove tremolite if it 21 were there. 22 Q. We haven't even seen a document that says 23 if you purchase an industrial mine can you remove 24 the asbestos, have we? 25 A. The company was always looking for</p>	<p style="text-align: right;">Page 160</p> <p>1 THE COURT: Thank you. Continue. 2 By MR. PANATIER: 3 Q. You were also shown this document, 8 July, 4 1974. This is Plaintiffs' 2530. And you were asked 5 about some of the findings here. This was to Robert 6 Role. 7 Now, Robert Rolle was in the Baby Products 8 Company, correct? 9 A. Yes, he was. Yes. 10 Can I see the document? 11 Q. I'm sorry, this was just handed to me 12 during cross-examination so I haven't been able to 13 make copies of it. 14 THE COURT: Hold on. 15 MS. SULLIVAN: We'll find it, your Honor. 16 THE COURT: Okay. Thank you. 17 BY MR. PANATIER: 18 Q. So -- 19 THE COURT: Wait one moment. The witness 20 wants to see the document. 21 MR. NOLAN: P-2530. 22 THE COURT: Thank you. 23 MS. SULLIVAN: May I, your Honor? 24 THE COURT: Sure. Thank you, Miss Sullivan. 25 A. Thank you.</p>
<p style="text-align: right;">Page 159</p> <p>1 industrial talcs. I don't know whether we've seen one 2 today, but it was an option that the company had to 3 look for additional talc. 4 Q. I'd ask that you just answer the question. 5 Have you seen any document that says boy, 6 we need to try to destroy the asbestos in the 7 industrial talc? 8 MS. SULLIVAN: Objection. 9 A. I have never -- 10 THE COURT: Hold on. Please don't answer the 11 question just yet. 12 MS. SULLIVAN: Objection to form. 13 THE COURT: Can you repeat the question? 14 MR. PANATIER: Sure. 15 BY MR. PANATIER: 16 Q. The question I'm asking, is there any 17 document that says we're trying to destroy asbestos 18 in the industrial talc? 19 A. I have not seen those documents. What I 20 have said is that 80 percent of the company's business 21 was industrial talc. 22 MR. PANATIER: And that's non-responsive, 23 your Honor. I object. 24 A. I have not -- as I said, I have not seen 25 such a document.</p>	<p style="text-align: right;">Page 161</p> <p>1 Q. Now, you've already told us that Johnson & 2 Johnson never once rejected a lot of asbestos -- a 3 lot of talc for asbestos content, correct? 4 A. Yes. 5 Q. So in this finding, they're looking at a 6 number of samples, correct? 7 A. Yes. 8 Q. And you know, sir, that the monitoring 9 frequency that they have there is the frequency that 10 was set up for the cosmetic talc, correct? 11 A. The monitoring frequency of cosmetic talc 12 was -- was this TEM? These are like four days 13 between. 14 Q. This is electron microscopy, correct? 15 A. I'm trying to find the word electron 16 microscopy. 17 THE COURT: Give Dr. Hopkins a moment to read 18 the document. 19 A. Can you show me the word -- oh yeah, I found 20 it. Okay. 21 The gaps between them were 10/22 to 10/26, 22 so that's four days. That does not reflect the 23 sampling for TEM. 24 Q. Sir, the sampling for industrial talc was 25 never ever as often as for the cosmetic talc,</p>

<p style="text-align: right;">Page 162</p> <p>1 correct?</p> <p>2 A. The sampling for industrial talc but</p> <p>3 production was monthly. Transmission electron</p> <p>4 microscopy, yes.</p> <p>5 Q. This is certainly a lot more often than</p> <p>6 monthly, is it not?</p> <p>7 A. Yes, but --</p> <p>8 Q. Sorry.</p> <p>9 A. Carry on.</p> <p>10 Q. Okay. This was a period of time from</p> <p>11 October through March, October '73 through March of</p> <p>12 '74, where it looks like they took weekly or a</p> <p>13 little bit closer in some instances, right?</p> <p>14 A. Yes. They are fairly frequent. Yes.</p> <p>15 Q. It's to Robert Role in the Baby Products</p> <p>16 Company, as you just said, correct?</p> <p>17 A. Yes.</p> <p>18 Q. And they find one, two -- we're not going</p> <p>19 to count this one up here. They said these were</p> <p>20 some other company's products. We're going to count</p> <p>21 this, one, two, three, four, five instances of</p> <p>22 asbestos or probable asbestos, correct?</p> <p>23 A. Probable chrysotile. That's what's written.</p> <p>24 Yes.</p> <p>25 Q. Now, these were all sold, correct?</p>	<p style="text-align: right;">Page 164</p> <p>1 A. You read what was written.</p> <p>2 THE COURT: Sustained.</p> <p>3 BY MR. PANATIER:</p> <p>4 Q. These are production samples, right?</p> <p>5 A. Of whatever, yes.</p> <p>6 Q. Written to the person in the Baby Products</p> <p>7 Company; true?</p> <p>8 A. Bob Role was actually in the research center</p> <p>9 at that time.</p> <p>10 Q. You just told us he was in the Baby</p> <p>11 Products Company.</p> <p>12 A. He was. But the Baby Product Company had an</p> <p>13 independent research center with expertise in talc.</p> <p>14 Q. Hold on. You said he was --</p> <p>15 MS. SULLIVAN: Your Honor, I just object to</p> <p>16 the comment "hold on."</p> <p>17 THE COURT: Overruled. Let's move on. Go</p> <p>18 ahead.</p> <p>19 BY MR. PANATIER:</p> <p>20 Q. You said he was in the Baby Products</p> <p>21 Company. Then I showed you that these were</p> <p>22 production samples and now you say well, I don't</p> <p>23 know where he was at that time; fair?</p> <p>24 Did you just do that?</p> <p>25 A. I did not say that. What I said was he's</p>
<p style="text-align: right;">Page 163</p> <p>1 A. No. There's no evidence that these were</p> <p>2 ever related to baby powder. These could equally well</p> <p>3 be ore samplings.</p> <p>4 Q. Look what it says on the front. "We've</p> <p>5 analyzed 21 samples of talc to determine the content</p> <p>6 of asbestiform materials." Right?</p> <p>7 A. Yes.</p> <p>8 Q. Okay. You've already told us, one, to the</p> <p>9 extent that asbestos was present in its talc, it</p> <p>10 could not be removed by beneficiation, correct?</p> <p>11 A. That is the general conclusion, yes.</p> <p>12 Q. Right.</p> <p>13 Asbestos was found in these samples,</p> <p>14 correct?</p> <p>15 A. Yes. Whatever these samples were.</p> <p>16 Q. And Johnson & Johnson never once rejected</p> <p>17 a lot for asbestos?</p> <p>18 A. For baby products, yes.</p> <p>19 Q. And Moshe sometimes helps me out a lot.</p> <p>20 Here's a real clear statement here.</p> <p>21 These are production samples, correct?</p> <p>22 A. Yes. But it doesn't say they're baby</p> <p>23 product production samples.</p> <p>24 MR. PANATIER: Objection. Non-responsive,</p> <p>25 your Honor.</p>	<p style="text-align: right;">Page 165</p> <p>1 based, according to the address there, at Johnson &</p> <p>2 Johnson Research Center, 501 George Street, which is</p> <p>3 different from the Baby Products Company down the</p> <p>4 road.</p> <p>5 Q. Sir, he was always in the research center</p> <p>6 even when he was in the Baby Products Company,</p> <p>7 correct?</p> <p>8 A. He was -- no. The Johnson & Johnson</p> <p>9 Research Center down the road on George Street was a</p> <p>10 different address from the Baby Products Company's</p> <p>11 research.</p> <p>12 Q. You were shown this document, D-7621,</p> <p>13 regarding three samples from 1990.</p> <p>14 Do you recall that?</p> <p>15 A. I do. Yes.</p> <p>16 Q. First of all, all three of these come from</p> <p>17 Johnson & Johnson's mines, or what were Johnson &</p> <p>18 Johnson's mines until a year before that, correct?</p> <p>19 A. They describe this being from the Cyprus</p> <p>20 Windsor and Cyprus Industrial Minerals. Cyprus owned</p> <p>21 a lot of mines in Vermont. When they purchased from</p> <p>22 J&J, they had already owned mines in the Vermont</p> <p>23 state.</p> <p>24 Q. You know that grade 36 was an industrial</p> <p>25 grade sold out of the previously owned Johnson &</p>

<p style="text-align: right;">Page 166</p> <p>1 Johnson mines, correct?</p> <p>2 A. Grade 36 is certainly an industrial grade.</p> <p>3 Q. That's a roofing talc grade, correct?</p> <p>4 A. Yes, it is.</p> <p>5 Q. Okay. Float feed is baby powder?</p> <p>6 A. Generally. That's the designation,</p> <p>7 although --</p> <p>8 Q. Hold on one second.</p> <p>9 A. Yes.</p> <p>10 MS. SULLIVAN: Let him answer the question.</p> <p>11 THE COURT: Hold on. Stop. The witness did</p> <p>12 not finish his response.</p> <p>13 BY MR. PANATIER:</p> <p>14 Q. However?</p> <p>15 A. I don't know what I was going to say now.</p> <p>16 The difference there is what I said earlier</p> <p>17 is that baby powder talc is graded 66 or 96. And</p> <p>18 those designations don't have that 66 or 96.</p> <p>19 Q. The only talc that went to a float feed</p> <p>20 was the baby powder, sir, correct?</p> <p>21 A. Commercially, that was correct. Whether</p> <p>22 they were doing experiments with, again, a lot of</p> <p>23 experiments going on. You could accuse me of</p> <p>24 speculating, I don't know what they were doing with</p> <p>25 float feed in experiments.</p>	<p style="text-align: right;">Page 168</p> <p>1 Do you recall that?</p> <p>2 A. I do. Yes.</p> <p>3 Q. Let's chat about that briefly.</p> <p>4 So the first thing is the citizen's</p> <p>5 petition itself, and this is so we can get our</p> <p>6 timing straight.</p> <p>7 MR. NOLAN: Your Honor, may I approach to</p> <p>8 give Dr. Hopkins his binders back?</p> <p>9 THE COURT: Sure.</p> <p>10 A. Thank you. Make life a little easier.</p> <p>11 THE COURT: Let Dr. Hopkins get to that</p> <p>12 exhibit.</p> <p>13 BY MR. PANATIER:</p> <p>14 Q. This is Defense Exhibit 7214.</p> <p>15 A. Okay.</p> <p>16 Q. Let me know once you've got it.</p> <p>17 A. I'm there.</p> <p>18 Q. Got it. Okay.</p> <p>19 So you know that the FDA received this</p> <p>20 petition on November 8, 1983, correct?</p> <p>21 A. Yes. They did.</p> <p>22 Q. The response, we could look up here, is</p> <p>23 July, looks like it went through a few offices, but</p> <p>24 July 1986. Is that fair?</p> <p>25 A. Yes.</p>
<p style="text-align: right;">Page 167</p> <p>1 Q. Repeatedly, repeatedly you have said,</p> <p>2 well, I don't want to speculate, I can't speculate.</p> <p>3 Here it would be utter speculation to say they were</p> <p>4 doing an experiment.</p> <p>5 This is not an experiment. This was</p> <p>6 periodic sampling sent for testing of three</p> <p>7 different talcs, correct?</p> <p>8 A. Yes.</p> <p>9 Q. Okay. And one of them, 90-28, is baby</p> <p>10 powder, correct?</p> <p>11 A. That's what's described as float feed.</p> <p>12 Q. Okay. So if we go to that one which is</p> <p>13 right here, client ID 90-28, you've seen that?</p> <p>14 A. Float feed, yes.</p> <p>15 Q. And we know they found anthophyllite</p> <p>16 asbestos, correct?</p> <p>17 You can look at it.</p> <p>18 A. They found anthophyllite period.</p> <p>19 Q. Let's see what they were looking for.</p> <p>20 See this was for asbestiform analysis?</p> <p>21 A. That was the point of the study. Yeah. You</p> <p>22 wouldn't do it otherwise. You're looking for asbestos</p> <p>23 if you can find it.</p> <p>24 Q. Sir, you brought up the citizen's</p> <p>25 petition.</p>	<p style="text-align: right;">Page 169</p> <p>1 Q. And you told us that this citizen who had</p> <p>2 asked for a warning statement on talc, that that</p> <p>3 request was rejected, right?</p> <p>4 A. That is what the FDA stated. Yes.</p> <p>5 Q. If you would turn, please, sir, to the</p> <p>6 page marked 50 at the bottom. It's the one that is</p> <p>7 stamped with the defense exhibit number on it.</p> <p>8 Let me know when you've found that.</p> <p>9 A. Found it.</p> <p>10 Q. All right. That is Linda Taylor's</p> <p>11 assessment that she does, correct?</p> <p>12 And if you want to turn, it goes for</p> <p>13 several dozen pages. It's signed on page 75 of 102.</p> <p>14 A. Yes.</p> <p>15 Q. That's Miss Taylor's assessment, right?</p> <p>16 A. Dr. Taylor, yeah.</p> <p>17 Q. I'm sorry. Dr. Taylor.</p> <p>18 A. Yeah.</p> <p>19 Q. Dr. Taylor.</p> <p>20 Now, it is Dr. Taylor's assessment about</p> <p>21 the risk that they rely upon to make their decision,</p> <p>22 isn't it?</p> <p>23 A. It's part of the story. They also have</p> <p>24 extensive data on monitoring of other products on the</p> <p>25 market.</p>

<p style="text-align: right;">Page 170</p> <p>1 Q. So let's, if we can, Moshe, let's pull 2 January 4, '84. Thank you. 3 Now, Dr. Hopkins, you have two 4 other -- four other binders up there. This next 5 document is not in the one in front of you. That's 6 the defense binder. Ours will be, it'll be either 7 in three or four. I can come help you with it. 8 A. Okay. 9 Q. Okay. 10 And, your Honor, it would be in your binder 11 at January 4, 1984. Binder 2. Those binders may be 12 lost to posterity. 13 THE COURT: No, no. They are here. 14 MR. PANATIER: It is Binder 2. Let me grab 15 that for you. 16 It's Binder 3. It's your Binder 2, Moshe. 17 Here it is. There you go, sir. 18 It's in your Binder 3, your Honor. 19 THE COURT: Binder 3. 20 MR. PANATIER: Can I help you grab the rest 21 out of there? 22 THE COURT: Sure. 23 MR. PANATIER: Okay. 24 THE COURT: Thank you. 25 (There is a discussion off the record.)</p>	<p style="text-align: right;">Page 172</p> <p>1 Douiller of Stony Brook, New York, requesting a 2 warning statement against asbestos contamination in 3 baby powder. 4 "John called to request a copy of an 5 article referenced in the petition. The article was 6 entitled Asbestiform Impurities in Commercial Talcum 7 Powders." 8 Did I read that right? 9 A. You did. 10 Q. Okay. Here there's a handwritten note. 11 Let me know if I translate his handwriting wrong. 12 "Please comment on publishing of the 13 analytical method." 14 You think I got that right? 15 A. I think so. Yes. 16 Q. Now, the analytical method would be the 17 CTFA method, correct? 18 A. I don't know. 19 Q. That's fair. 20 You know that the actual response does 21 discuss at some length CTFA J4-1? 22 A. I need to see the response. It was a long 23 time ago, but there were several analytical methods. 24 Q. If you want to see a discussion of it, 25 it's on page 71 of 102. If you need to see it.</p>
<p style="text-align: right;">Page 171</p> <p>1 BY MR. PANATIER: 2 Q. Do you see that this is a report of a call 3 from the Johnson & Johnson Baby Products Company, 4 January 4, 1984, sir? 5 A. I do. Yes. 6 Q. And it's a memo by Robert G. Kohler and 7 it's to the talc file, correct? 8 A. It is. Yes. 9 MR. PANATIER: We offer this in evidence. 10 MS. SULLIVAN: No objection. 11 MR. PANATIER: Plaintiffs' 3431. 12 THE COURT: Admitted. 13 (Plaintiff's Exhibit 3431 was moved into 14 evidence.) 15 BY MR. PANATIER: 16 Q. On January 4, 1984, the FDA calls Johnson 17 & Johnson, right? 18 A. Yes. 19 Q. And it's John Wenninger, correct? 20 A. Yes. 21 Q. It says, "At 9:10 a.m. I received a 22 telephone call from John Wenninger, Deputy Director 23 Cosmetics Technology of FDA. 24 "Mr. Wenninger informed me that FDA had 25 received a citizen's petition from a Philippe</p>	<p style="text-align: right;">Page 173</p> <p>1 A. Okay. Let's press on. 2 Q. So the FDA gives Johnson & Johnson a 3 heads-up, correct? 4 A. They're asking do you have a copy of an 5 article. 6 Q. They also told them a citizen's petition 7 has been filed, correct? 8 A. Yes. 9 Q. So let's go back to the citizen's 10 petition. 11 Do you have that, sir? 12 A. Um-hum. 13 Q. And if we can, let's go to the page at the 14 bottom marked 39 of 102. 15 MS. SULLIVAN: I'm sorry, counsel, what page? 16 MR. PANATIER: This is 39 of 102. 17 BY MR. PANATIER: 18 Q. Do you see, sir that that's a discussion 19 of the quantitative risk of mesothelioma? 20 You see that? 21 A. Let me read it. 22 Q. Sure. 23 A. Yes. 24 Q. That's 5/21/85, right? 25 A. Yes.</p>

<p style="text-align: right;">Page 174</p> <p>1 Q. And I'm just going to call that the Brown 2 assessment. Okay. 3 Now, they were looking at insulation 4 worker studies for this assessment, right? It says 5 it right there in the subject if you need a 6 reference. 7 A. Okay. It does. Yes. 8 Q. Because one of the problems was they 9 didn't have any data, any actual testing data of 10 asbestos fiber release in baby powder, did they? 11 A. Who's "they"? 12 Q. The FDA. 13 A. No. I mean, the FDA, by 1984, had spent a 14 great deal of time and taxpayers' money evaluating 15 lots of competitive products. 16 Q. Listen to my question again. 17 My question was, they didn't have any 18 information on assessing the actual asbestos fiber 19 release from products during use? 20 MS. SULLIVAN: Objection. Lacks foundation. 21 THE COURT: Objection overruled. 22 You could answer. 23 A. I'm not sure I understand the question. 24 They had information on the absence of asbestos of 25 products on the United States market.</p>	<p style="text-align: right;">Page 176</p> <p>1 A. Yes. 2 Q. And she says that "Infants exposed to 3 asbestos from talc could be exposed to an additional 4 amount above background on the order of .04 to .08 5 fibers per cc for approximately two years." Right? 6 A. Yes. That was a hypothetical calculation. 7 Q. Yes. 8 A. The whole thing is hypothetical. Yes. 9 Q. Right. 10 And that goes to the point. There were no 11 actual measurements of asbestos in the air during 12 the use of the talc products; no one had done that 13 work, correct? 14 MS. SULLIVAN: Objection. Lacks foundation. 15 THE COURT: Overruled. 16 You can answer. 17 A. I'm not aware that anyone's ever measured 18 asbestos in the air of people using talc. 19 Q. Are you familiar with the Gordon paper in 20 2014? 21 A. You need to show me. 22 Q. I'm just asking if you're familiar with 23 it. That's fine. 24 So look at that range for baby powder for 25 their hypothetical; .04 to .08 fibers per cc, right?</p>
<p style="text-align: right;">Page 175</p> <p>1 Q. They didn't have any information on when a 2 product is used, when a baby powder is used, an 3 actual series of measurements taken of asbestos in 4 the air, did they? 5 A. Well, no. They haven't found any asbestos 6 in the product, so you wouldn't have found it in the 7 air. 8 Q. They were relying on other studies of 9 other workers, including the insulation asbestos 10 workers, right? 11 A. If you are going to measure atmospheric 12 levels of asbestos, you have to look at what happens 13 when people are mining it or milling it or digging it 14 out of the ground and using it. 15 Q. All I'm asking you is what they looked at. 16 They looked at insulation studies, right? 17 A. They looked at insulation workers in this 18 case, yes. 19 Q. Let's take a look at, if you go to page 75 20 of 102. 21 Have you found that? 22 A. Yes. 23 Q. There's Linda Taylor's signature, right? 24 A. Um-hum. 25 Q. Dr. Taylor?</p>	<p style="text-align: right;">Page 177</p> <p>1 A. Yes. 2 Q. When Johnson & Johnson did their own 3 hypothetical, they had .16 to .18, correct? 4 A. Yes. 5 Q. .16 is four times higher -- 6 A. No. It's not correct. .16 relate to 7 fibers, not fibers per cc. 8 Q. We'll get to that. 9 A. Good. 10 Q. Would you agree mathematically that .16 is 11 four times higher than .04? 12 A. If it related to fibers, just fibers, the 13 answer is yes. 14 Q. Okay. 15 A. But because in this case one relates to 16 fibers per cc and the other relates to fibers over a 17 ten or five-minute time frame period. 18 Q. I understand your testimony about that. 19 .18 would be more than twice as much as 20 .08, correct? 21 A. Again, you're comparing apples with pears. 22 Q. I'm asking you about numbers, sir. 23 A. Numbers, yes. 24 Q. Okay. 25 A. But not comparing apples with pears. Two</p>

<p style="text-align: right;">Page 178</p> <p>1 apples are not greater than one pear. 2 Q. I promise we're going to get our fruit 3 straight. 4 A. Good. 5 Q. Okay? 6 She says, "Although the cumulative amount 7 of asbestos would appear to be of no consequence, 8 the estimated exposure level is 100 to 200 times 9 greater than background." Right? 10 A. That's what she's written. 11 Q. Just based on this hypothetical, with no 12 actual data of fiber release, she says that the 13 estimated exposure level is 100 to 200 times above 14 background, right? 15 A. That's what she's stated. 16 Q. Let's take this document a little bit 17 further. 18 If you will look, please, sir, at page 71 19 of 102. In that first paragraph there. When you 20 find it, let me know. 21 You see the first paragraph starting 22 "consumer talc"? 23 A. Yes. 24 Q. Okay. Actually, let me interrupt. Let me 25 ask you this question. You said this this morning.</p>	<p style="text-align: right;">Page 180</p> <p>1 anthophyllite by XRD were also examined by optical 2 microscopy, OM, to determine crystal morphology. 3 "In all cases, the amphibole found tremolite 4 and anthophyllite were present in the massive 5 non-fibrous form. The level of detectability is 6 approximately .1 for tremolite and two percent for 7 anthophyllite." 8 By the way, I'm going to stop there and I'll 9 finish up in a moment, but... 10 MS. SULLIVAN: Could I ask counsel just to 11 follow the court's instruction? 12 THE COURT: Overruled. 13 BY MR. PANATIER: 14 Q. I will read the whole paragraph, but my 15 question here is if something is then present at 16 below .1 for that method, tremolite, or two percent 17 anthophyllite, it's not going to be seen, correct? 18 A. That's the whole point of using transmission 19 electron microscopy. You take it to the next level. 20 Q. Sir, can you just answer my question? 21 If you're using the method as they 22 described and something was there at less than .1 23 percent for tremolite or two percent for 24 anthophyllite, they would not see it, correct? 25 A. Using X-ray diffraction, you'd certainly see</p>
<p style="text-align: right;">Page 179</p> <p>1 "Extensive analysis and testing of talcum powder was 2 done in response to the citizen's petition." Right? 3 A. Yes. Not just in response, but prior to it. 4 Q. You said specifically this morning "in 5 response to," correct? 6 A. I may have done. But it was certainly done 7 prior to. 8 Q. Well, let's -- 9 MS. SULLIVAN: I'm sorry, counsel. Could we 10 read the whole paragraph in the interest of 11 completeness from the samples of cosmetic talc down to 12 the bottom? 13 MR. PANATIER: Sure. 14 Oh, no. I'm not going to read all that. 15 MS. SULLIVAN: Your Honor, I request, in the 16 interest of completeness, we read the testing 17 statement. 18 MR. PANATIER: Your Honor, I mean -- 19 THE COURT: Hold on. I'm reviewing it to 20 make a determination. Thank you. 21 For completeness, read the entire paragraph. 22 MR. PANATIER: "Samples of cosmetic talc 23 products were analyzed in 1979 by the Division of 24 Cosmetics Technology using X-ray diffraction, XRD. 25 Samples found to be contaminated with tremolite or</p>	<p style="text-align: right;">Page 181</p> <p>1 an amphibole less than .3 percent. 2 MR. PANATIER: Your Honor, I object to 3 non-responsive. 4 A. I'm sorry. Ask the question. Maybe I 5 didn't understand it. 6 THE COURT: One more time. 7 BY MR. PANATIER: 8 Q. The question is, using the method they're 9 talking about here, XRD and OM -- you see they also 10 say they used OM? 11 A. Yes. 12 Q. -- optical microscopy, if the substance 13 was there for tremolite in less than .1 percent, 14 they wouldn't see it, correct? 15 A. Not with that test method, no. 16 Q. If anthophyllite was there in less than 17 two percent, they wouldn't see it, correct? 18 A. Not with that test method. 19 Q. None of the samples was found to contain 20 serpentine at any detectability limit of one to two 21 percent, same question for serpentine which includes 22 chrysotile, correct? 23 A. Correct. Not at that level. 24 Q. They wouldn't see it if it was less than 25 one to two percent by XRD, correct?</p>

<p style="text-align: right;">Page 182</p> <p>1 A. Not with XRD alone.</p> <p>2 Q. "These samples were submitted for SEM</p> <p>3 analysis and if fibers were found, the samples were</p> <p>4 to be examined by energy dispersive X-ray analysis,</p> <p>5 EDXA, to determine the nature of any fiber-like</p> <p>6 particle detected. The results of the latter, SEM</p> <p>7 and EDXA analysis, are not known to this reviewer.</p> <p>8 No analysis of cosmetic talc have been performed by</p> <p>9 FDA since '79."</p> <p>10 I'll stop there again.</p> <p>11 Sir, the FDA did no testing, no extensive</p> <p>12 testing of talcum powder in response to the</p> <p>13 citizen's petition, did they?</p> <p>14 A. No. They tested up till 1979.</p> <p>15 Q. They didn't do any in response to the</p> <p>16 citizen's petition which was filed at the end of</p> <p>17 1983?</p> <p>18 A. I'm not aware that they did.</p> <p>19 Q. Okay.</p> <p>20 A. But beyond that, I can't say more. I'm not</p> <p>21 aware they did or didn't.</p> <p>22 Q. What you said this morning that they did</p> <p>23 extensive testing in response to the citizen's</p> <p>24 petition was not true?</p> <p>25 A. No, I think you are misunderstanding. The</p>	<p style="text-align: right;">Page 184</p> <p>1 A. Yes.</p> <p>2 Q. This is another assessment or discussion</p> <p>3 of Linda Taylor's assessment, right?</p> <p>4 A. It is. Yes.</p> <p>5 Q. By Gary Flamm. And that's June 6, 1985,</p> <p>6 right?</p> <p>7 MS. SULLIVAN: It's actually by --</p> <p>8 A. It's by Robert Brown at FDA. And he is</p> <p>9 writing to Gary Flamm.</p> <p>10 Q. Yes. Yes.</p> <p>11 And you discussed this bit up here about</p> <p>12 the risk that they calculated, right?</p> <p>13 A. Yes. They calculated a risk. Yes.</p> <p>14 Q. We'll get there.</p> <p>15 Let's go down here. Let's look at this</p> <p>16 footnote right here.</p> <p>17 Do you see where he's got different</p> <p>18 references flagged; one, Linda Taylor. Then you've</p> <p>19 got 1, 10, 11 here?</p> <p>20 A. Yes.</p> <p>21 Q. Let's go and look at reference 11. That</p> <p>22 is on page 37 of 102. Go ahead and find page 37.</p> <p>23 Have you found that?</p> <p>24 A. Yes, I have.</p> <p>25 Q. Do you see that footnote 11 is a reference</p>
<p style="text-align: right;">Page 183</p> <p>1 response to the citizen's petition was to review the</p> <p>2 data they had and they had already got that, and so</p> <p>3 that was their response. It was part of their</p> <p>4 response to look at the data they had and come to a</p> <p>5 conclusion on it.</p> <p>6 Q. Maybe at a break we'll look at your</p> <p>7 testimony. Okay.</p> <p>8 Let me read the next paragraph. "As noted</p> <p>9 previously, there are non-fibrous forms of minerals</p> <p>10 with essentially the same chemical composition as</p> <p>11 the asbestos varieties. In some cases the</p> <p>12 non-fibrous form has the same name as its fibrous</p> <p>13 counterpart; eg., tremolite.</p> <p>14 "According to the U.S. Department of the</p> <p>15 Interior, non-fibrous, non-asbestiform tremolite is</p> <p>16 the common form of this mineral, while fibrous</p> <p>17 tremolite asbestiform is a very rare form of this</p> <p>18 mineral."</p> <p>19 Bottom line, sir, is FDA, as far as you</p> <p>20 know, as far as what they said, no testing after</p> <p>21 '79, right?</p> <p>22 A. That is what is written. Yes.</p> <p>23 Q. Now, let's turn to page 28, okay, 28 of</p> <p>24 102.</p> <p>25 Are you there?</p>	<p style="text-align: right;">Page 185</p> <p>1 to denial of petition for labeling of warning of the</p> <p>2 hazardous effects produced by asbestos in cosmetic</p> <p>3 talc from Philippe Douiller.</p> <p>4 Do you see that?</p> <p>5 A. Yes, I do.</p> <p>6 Q. July 11, 1984, that's right here.</p> <p>7 7/11/84, John Wenninger -- according to that, John</p> <p>8 Wenninger had already denied the petition?</p> <p>9 MS. SULLIVAN: Objection. Lacks foundation.</p> <p>10 THE COURT: Overruled.</p> <p>11 You can answer.</p> <p>12 BY MR. PANATIER:</p> <p>13 Q. Let's read it. Denial is opposite of</p> <p>14 granted, right?</p> <p>15 A. It's in quotes. What is written is</p> <p>16 denial --</p> <p>17 Q. Okay. "Denial of petition for labeling of</p> <p>18 warning of the hazardous effects produced by</p> <p>19 asbestos in cosmetics talc from Philippe Douiller,"</p> <p>20 right?</p> <p>21 A. Yes.</p> <p>22 Q. Okay.</p> <p>23 A. It's a memo. Then it goes on to say an FDA</p> <p>24 memo, so it's not the petition. It says FDA memo.</p> <p>25 Q. Let me tell you what I'm concerned about.</p>

<p style="text-align: right;">Page 186</p> <p>1 This right here. Denial of petition, right? You 2 see that? 3 A. That's the heading of the topic that they 4 are talking about. 5 Q. That is six months after Mr. Wenninger 6 calls Johnson & Johnson and gives them a heads-up, 7 right? 8 A. Mr. Wenninger calls J&J, gives them a 9 heads-up and says there's a reprint I'd like you to 10 send to me, please. 11 Q. Right. 12 And then a few months later he's drafted a 13 memo about denying the petition, right? 14 A. He's drafted a memo about denying the 15 petition which is different from the actual petition 16 itself. 17 Q. That's before, four months before Ms. 18 Taylor does her assessment, right? 19 A. Yep. It doesn't say he's come to that 20 conclusion. 21 Q. Is it four months before, sir? 22 A. It is four months, yes. 23 Q. Is it ten months before Brown's 24 assessment? 25 A. Yes.</p>	<p style="text-align: right;">Page 188</p> <p>1 that memo. 2 Q. We know one thing, it was a denial? 3 A. No. That's the topic, in quotes. The topic 4 is about denial. 5 Q. Okay. Sir -- oh, one other thing. 6 In the Linda Taylor assessment, or 7 Dr. Taylor, my apologies, in the Dr. Taylor 8 assessment, you told us that she had calculated 9 something like a one in 100 million risk for 10 mesothelioma from talc, right? 11 MS. SULLIVAN: Objection. Lacks foundation. 12 THE COURT: Overruled. 13 A. They did -- 14 Q. Didn't you tell us that? 15 A. The text states one to the minus eight, 16 which is one in a hundred million. 17 Q. Okay. I'm putting you on the spot, but 18 are you in a position to agree with me there's about 19 325 million people living in the United States? 20 A. Yeah. About. 325, 330. Yeah. 21 Q. You know that we've got four people in 22 this case with mesothelioma? 23 A. Yes. 24 Q. Are you here to tell us that somehow we 25 found the only four people with mesothelioma after</p>
<p style="text-align: right;">Page 187</p> <p>1 Q. Is it eleven months before Flamm receives 2 it? 3 A. Yes. 4 Q. And is it a full two years before they 5 ultimately reject it? 6 A. Yes. Based on all, everyone's memo and 7 their reports combined together. 8 Q. Have you ever seen that memo where they 9 had already denied the petition six months after 10 they told J&J about it? 11 MS. SULLIVAN: Objection. Lacks foundation. 12 It says memo. 13 THE COURT: Please rephrase. 14 BY MR. PANATIER: 15 Q. Have you seen that footnote 11 entitled 16 denial of petition for labeling of warning of the 17 hazardous effects of powdered effects produced by 18 asbestos in cosmetic talc, from Philippe Douiller? 19 Have you seen it? 20 A. The FDA memo? 21 Q. Yes. 22 A. Written by Mr. Wenninger? 23 Q. Yes. 24 A. I have not seen that memo. I don't know 25 what the contents were, or what his opinion was out of</p>	<p style="text-align: right;">Page 189</p> <p>1 using Johnson's Baby Powder in this country? 2 MS. SULLIVAN: Objection. Lawyer argument. 3 THE COURT: Objection overruled. 4 You can answer. 5 A. As I recollect, what Dr. Taylor said is less 6 than one in a hundred million. 7 Q. Even less, right? 8 A. Yes. 9 Q. Even less? 10 A. One in a thousand million. 11 Q. And four of them have a lawsuit in this 12 courtroom, right? 13 A. Yes. 14 Q. And based on the population in the U.S. 15 you would expect this many, 3.25 total people with 16 mesothelioma from this, right? 17 A. Again, you're getting into the area of 18 speculation, because what Dr. Taylor said was less 19 than one in a hundred million. I can't speculate -- 20 Q. Yeah. 21 A. -- on a hypothetical calculation that was 22 done in 1984. 23 Q. You know there are four people in this 24 case with undisputed mesothelioma. You know that? 25 A. I agree.</p>

<p style="text-align: right;">Page 190</p> <p>1 Q. And, in fact, Johnson & Johnson, you have 2 told us what the FDA evaluated in 1984/'85/'86, 3 right? 4 A. Yes. 5 Q. And as you told us that, you know Johnson 6 & Johnson knows that the risk is far higher than 7 that based on the documents Johnson & Johnson has in 8 its company, correct? 9 MS. SULLIVAN: Objection. That's just lawyer 10 argument. 11 THE COURT: Objection overruled. 12 A. I don't agree. The documents that are in 13 Johnson & Johnson's data indicate no asbestos in the 14 product sold. 15 Q. Dr. Hopkins, so this is the FDA. We'll 16 talk about Johnson & Johnson. I'm going to put this 17 right here. 18 Johnson & Johnson has documentation of 19 over 100 confirmed mesotheliomas from people who 20 used Johnson's Baby Powder in the company files, 21 doesn't it? 22 MS. SULLIVAN: Objection. That's lawyer 23 lawsuits. 24 THE COURT: Counsel, stop with the speaking 25 objections.</p>	<p style="text-align: right;">Page 192</p> <p>1 The jury is to disregard that argument with 2 the court. 3 MS. SULLIVAN: These are lawsuits. 4 THE COURT: Excuse me, counsel. Stop it. 5 (Sidebar.) 6 THE COURT: Save the discussion for here. Do 7 not argue with me at all. 8 MS. SULLIVAN: Judge -- 9 THE COURT: Do not argue with me in front of 10 this jury for everyone to hear. 11 MS. SULLIVAN: My apologies. 12 THE COURT: Well, your apologies, but you 13 continue violating orders throughout this trial. 14 MS. SULLIVAN: But this is so improper, your 15 Honor. This is a -- 16 MR. PANATIER: She's trying -- 17 THE COURT: Hold on. Stop it. Stop it. 18 Stop it. 19 MS. SULLIVAN: These are lawsuits. 20 THE COURT: Stop it. The jury -- take me off 21 of that for a moment. Stop speaking. 22 (Sidebar ends.) 23 THE COURT: Jury, I'd like you to take a 24 ten-minute break in the jury room. 25 Thank you. We'll come get you when we're</p>
<p style="text-align: right;">Page 191</p> <p>1 MS. SULLIVAN: Objection. 2 THE COURT: Objection overruled. The jury's 3 to ignore that comment. 4 You can answer the question. 5 A. The answer to the question is I do not know 6 what's in the company's legal department today. 7 Q. I'm not asking about the legal department. 8 The only way I could know about them is if you gave 9 them to me. 10 You understand that? 11 A. Yes. 12 Q. And, sir, you know that Johnson & Johnson 13 has done its own evaluations of over 100 cases of 14 mesothelioma for people who use Johnson's Baby 15 Powder and Shower to Shower to confirm, one, that 16 those people have mesothelioma, and two, that the 17 causation of the product and those mesotheliomas was 18 rated as possible, right? 19 MS. SULLIVAN: Objection. Lacks foundation. 20 THE COURT: Objection overruled. I have -- 21 counsel, don't speak over me. 22 MS. SULLIVAN: Can I have a sidebar, 'cause 23 this is really misleading and I'd like a sidebar. 24 THE COURT: Stop with the speaking 25 objections.</p>	<p style="text-align: right;">Page 193</p> <p>1 done. Thanks. 2 (Jury exits.) 3 THE COURT: Please excuse us, Dr. Hopkins. 4 Thank you. 5 You can return to sidebar. 6 (Sidebar.) 7 MS. SULLIVAN: I object -- 8 THE COURT: Hold on one moment. Take me off 9 of -- take me off of sidebar. Just take me off of 10 sidebar for a moment. 11 (Sidebar ends.) 12 THE COURT: Anyone in the back, you don't 13 need to remain standing. You could take a break or 14 please be seated. Thank you. 15 (Sidebar.) 16 THE COURT: Now, Miss Sullivan, your concern. 17 MS. SULLIVAN: I object. There's a 18 regulatory requirement when we get a claim, when J&J 19 gets a claim for a lawsuit that they have to report it 20 as part of the AE, and there's a specific regulation 21 when they make a regulation and they have to report it 22 as possible. 23 And he's talking about lawsuits. To say that 24 there are actual people who got mesothelioma from baby 25 powder and confirmed that to the FDA is enormously</p>

<p style="text-align: right;">Page 194</p> <p>1 misleading and prejudicial, and he knew exactly what he 2 was doing. These are lawsuits and claims. 3 MR. PANATIER: If I can respond? 4 MS. SULLIVAN: And allegations. 5 THE COURT: Wait. Have you completed? 6 MS. SULLIVAN: Yes. 7 THE COURT: Thank you. 8 I want to now hear this uninterrupted. 9 Proceed. 10 MR. PANATIER: Yes, your Honor. 11 Adverse event reports are something different 12 than what we have here. These are event reports that 13 Johnson & Johnson internally does their own assessment 14 on any claim they're aware of where someone has 15 mesothelioma and has alleged that they used baby 16 powder. They do it with three or four doctors per 17 event, so per person, and they go out and collect the 18 information. 19 So if they, as counsel says, if they get 20 sued, they evaluate the case, the diagnosis, and then 21 they, by way of example, here's one just for by way of 22 example. Linda Stanton is the person, and developed 23 mesothelioma. They have pages and pages where they 24 actually go through the medical history, they confirm 25 the mesothelioma, and then they assess it as to whether</p>	<p style="text-align: right;">Page 196</p> <p>1 about was the FDA's analysis of risk. This is 2 triggered by a regulatory requirement. It's been 3 excluded in just about every litigation. This is AE 4 case reports based on lawsuits and there's specific 5 regulatory language that requires you to report it as 6 possible. 7 MR. PANATIER: May I respond briefly? 8 THE COURT: Yes. 9 MS. SULLIVAN: I mean, these aren't based on 10 claims, they're based on lawsuits. 11 THE COURT: Thank you. 12 MR. PANATIER: This isn't what is required to 13 be reported. They turned something else over to the 14 FDA. This is their own internal assessment. This is 15 not an AER report. There are AER reports that they 16 have and they have recently turned over some of those, 17 but we're not seeking to offer those in. 18 There is an FDA form that J&J fills out 19 whenever they get one, and whether or not they've 20 actually done that for these is disputed, but I don't 21 think that's part of this case. That's different than 22 this. 23 THE COURT: Thank you. 24 MR. PANATIER: This is their own assessment. 25 MS. SULLIVAN: I'm sorry.</p>
<p style="text-align: right;">Page 195</p> <p>1 or not the company is responsible or the product. And 2 this one says the report, sorry, was assessed as 3 serious, medically significant, and company causality 4 was assessed as possible. 5 Our entire point here is if there's no 6 asbestos it could never be assessed as possible. 7 That's the first thing. 8 And the second thing is all of these people, 9 it's also documented all of these people used Johnson's 10 Baby Powder or another J&J talc product, and it's 11 obviously relevant to this line of questioning because 12 counsel elicited from this witness what they wanted to 13 show the jury was the risk factor for this, while 14 Johnson & Johnson understands that, shoot, if it's one 15 per hundred million, they know that's not true, because 16 they have at least 100, I believe it's 119 cases. And 17 that's all I'm going to ask about. 18 MS. SULLIVAN: Your Honor, I -- 19 THE COURT: Hold on a second. There 20 are four -- is there any other comment by plaintiff's 21 counsel? 22 MR. PANATIER: No. 23 THE COURT: Thank you. 24 Now you can respond. 25 MS. SULLIVAN: Your Honor, what I talked</p>	<p style="text-align: right;">Page 197</p> <p>1 THE COURT: Was there anything else you 2 wanted to say? 3 MS. SULLIVAN: Only, your Honor, these are 4 case reports triggered by regulation. It's reversible 5 error. They are excluded in just about every 6 litigation based on lawsuits and claims. 7 THE COURT: Okay. Thank you. 8 This is not -- there's nothing on here that 9 indicates that it is a regulatory reporting requirement 10 as opposed to, for example, an insurance company claim 11 adjustor would do an assessment for various purposes, 12 setting reserves, figuring out potential liability, et 13 cetera. This is an internal assessment for the same 14 purpose. 15 In fact, indeed it starts on December -- this 16 is for event report Number 30000365879 with regard to 17 an individual Linda Stanton. December 20, 2016, claims 18 analyst was forwarded via secure e-mail documents from 19 J&J law department. Documents were received by J&J law 20 department which is the J&J date of awareness, 28-page 21 document is complete and it continues on, where it 22 essentially would be the same thing being done 23 internally as a claims adjustor would do. 24 There is nothing here evidencing reporting to 25 the FDA or any other governmental agency. I'm going to</p>

<p style="text-align: right;">Page 198</p> <p>1 permit it.</p> <p>2 MS. SULLIVAN: Other lawsuits, your Honor --</p> <p>3 THE COURT: I've already heard your comments.</p> <p>4 Thank you.</p> <p>5 MR. PANATIER: While we're on the record,</p> <p>6 your Honor, we'll just offer the packet as -- hold on,</p> <p>7 I have the exhibit, it's Exhibit 3149, your Honor.</p> <p>8 THE COURT: Wait. Come back here.</p> <p>9 MR. PANATIER: Yes.</p> <p>10 THE COURT: So what exactly -- Exhibit 3149,</p> <p>11 you now want to give these jurors these event</p> <p>12 reporting?</p> <p>13 MR. PANATIER: Yes. Yes. I believe --</p> <p>14 THE COURT: How is that admissible? First of</p> <p>15 all, they deal with other named individuals, and how --</p> <p>16 I understand the relevance in questioning based upon</p> <p>17 the prior testimony as elicited from defense counsel</p> <p>18 relative to the response to the FDA petition and</p> <p>19 setting, you know, what was it, ten to the negative</p> <p>20 eight power risk assessment.</p> <p>21 But how is this, how is this not a</p> <p>22 prejudicial issue now?</p> <p>23 MR. PANATIER: Okay. So I think what we can</p> <p>24 do is if on the break all I want to do is verify the</p> <p>25 number of them and I can do that with Dr. Hopkins</p>	<p style="text-align: right;">Page 200</p> <p>1 CERTIFICATION</p> <p>2</p> <p>3 I, ANDREA F. NOCKS, C.S.R., License Number</p> <p>4 30XI00157300, a Certified Court Reporter in and for the</p> <p>5 State of New Jersey, do hereby certify the foregoing to</p> <p>6 be prepared in full compliance with the current</p> <p>7 Transcript Format for Judicial Proceedings and is a</p> <p>8 true and accurate non-compressed transcript to the best</p> <p>9 of my knowledge and ability.</p> <p>10</p> <p>11</p> <p>12</p> <p>13 <i>Andrea Nocks CCR CCR</i> AUGUST 14, 2019</p> <p>14 ANDREA F. NOCKS CERTIFIED COURT REPORTER DATE</p> <p>15 MIDDLESEX COUNTY COURTHOUSE</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
<p style="text-align: right;">Page 199</p> <p>1 perhaps, with counsel present. I can say Dr. Hopkins,</p> <p>2 can you look through these and just verify the numbers</p> <p>3 so we don't have him sitting up there counting them.</p> <p>4 Because I have my count, but he may want to count them.</p> <p>5 MS. SULLIVAN: Just tell him how many and</p> <p>6 he'll accept your representation, over my objection.</p> <p>7 MR. PANATIER: I'll do that.</p> <p>8 THE COURT: Count them and then that can be</p> <p>9 stipulated.</p> <p>10 MR. MAIMON: I think there is other</p> <p>11 relevance, your Honor, although it might not be with</p> <p>12 this witness. But, for instance, Miss McNeill is one</p> <p>13 of the reports. They have denied the possibility that</p> <p>14 her mesothelioma is caused by their product. And here</p> <p>15 is an internal admission, and it's an admission by a</p> <p>16 party opponent with regard to this party that they've</p> <p>17 assessed the causality as possible.</p> <p>18 MR. PLACITELLA: Moreover, moreover, in the</p> <p>19 report itself it says that there is no other explained</p> <p>20 cause.</p> <p>21 (Continuation of the day's proceedings</p> <p>22 in Volume 2.)</p> <p>23</p> <p>24</p> <p>25</p>	

[& - 200]

Page 1

<p>&</p> <p>& 3:2,15,17,18 6:8 6:9,10,11,21,22 7:4,24,25 8:19,19 9:12 10:12,17 17:2 21:7,11 26:24 27:17 30:4 46:25 60:6,8,10 68:20 78:22 94:22 102:1 105:12 106:15 111:9 112:9,23 113:10 113:16 120:6,14 121:22 122:25 130:19,21 131:6 132:19 139:21,25 140:12,16,21 141:3 142:22 143:13 145:4,9 149:12,15 150:1,5 150:8,20 153:19 154:21 156:6,24 157:9,13,16 158:13 161:1 163:16 165:1,8,17 165:17,25 171:3 171:17 173:2 177:2 186:6 190:1 190:6,7,13,16,18 191:12 194:13 195:14</p>	<p>08 176:4,25 177:20 08542 3:16 08903 2:3 0932-17as 1:9</p> <p>1</p> <p>1 1:6 2:6,6 16:10 17:22 49:25 51:10 57:17 77:17 86:1 99:7 121:8 122:24 122:24 180:6,16 180:22 181:13 184:19 1,000 62:10 139:17 140:12 1/30/67 75:15 10 184:19 10/13 72:10 10/13/61 72:11 10/22 161:21 10/26 161:21 10/29/73 89:18 100 15:11,21 19:13 20:21 178:8,13 188:9 190:19 191:13 195:16 10022 3:6 100th 15:15 101 31:3,4 1015 72:15 102 169:13 172:25 173:14,16 175:20 178:19 183:24 184:22 1041 71:1 1048 127:23 128:2 10556 137:20 1056 5:5 97:7,10 97:15 106 131:23,24 10613 200:12</p>	<p>109 5:13 1096 22:10 87:15 87:22 10:17 47:14 10:39 47:14 11 126:15,17,18 184:19,21,25 185:6 187:15 11/5 111:18 116 4:7 119 195:16 11:42 96:10 11:51 96:10 11th 3:6 12 72:14 120 99:6 1201 3:8 125 45:6 127 3:3 129 5:10 12:34 135:8 13 89:19 1382 71:10 14 2:5 6:12 73:15 96:17 98:2 200:13 1475 92:3 15 47:5 95:25 129:16 16 177:3,5,6,10 164 45:6 17 3:15 18:3 145:1 171 5:8 18 5:11 64:10,16 64:18,19 177:3,19 1809-17as 1:2 1896 23:15 19 77:4,9,11 144:24 1920s 74:25 193 45:6,6</p>	<p>1930s 75:9 1966 129:17 1967 119:2 1968 126:20 1970s 7:22,25 8:6 21:19 34:5 1971 77:24 123:9 127:18 1973 25:9 137:13 137:15 139:3,13 1974 38:15 107:18 160:4 1976 78:25 1977 49:17 54:11 1978 157:4,12 1979 179:23 182:14 1983 9:20 168:20 182:17 1984 59:20,22 170:11 171:4,16 174:13 185:6 189:22 190:2 1985 184:5 1986 9:22,23 10:12 10:15,18,23 12:8 12:10 168:24 1990 112:16 165:13 1991 114:4,5 115:7 1:35 135:4 1:52 135:9</p>
<p>0</p>			<p>2</p>
<p>0.1 20:6 0.11 15:14 00 15:14 04 176:4,25 177:11 05 22:23 88:2 07039 2:22 07701 3:3</p>			<p>2 1:6 2:6 39:3 97:20 109:22 170:11,14,16 199:22 2/72 84:18 20 31:10 197:17 200 2:6 19:13 178:8,13</p>

[2000 - 718]

Page 2

2000 149:15	183:23 197:20	39 173:14,16	560 44:25 45:1,2
201 3:16	283 40:16	3rd 3:5	57 5:14 25:15,21
2014 176:20	284 44:21	4	81:10
2016 197:17	29 5:16	4 34:12 50:21	58 5:16 29:3,9
2019 2:5 6:12	290 2:22	170:2,11 171:4,16	94:4
200:13	294 59:17	4/24/74 104:14	59 110:15
2035 112:19	297 5:17 56:12,17	4/27/72 87:6	6
2049 104:16	298 54:15	4/27/73 88:19	6 4:6 126:23
2050 105:19	3	4/4/74 102:10	127:17 184:5
2051 5:6	3 70:15 97:20 99:7	40,000 132:11	60 111:18
2053 110:16	170:16,18,19	41 102:11,13	6035 5:10 129:6,13
21 106:15 163:5	181:1	419 85:22	6040-17as 1:20
228 61:21 62:5	3,000 97:25 140:13	42 104:16	60s 31:5
63:4,7	3.25 189:15	427 85:22	62 112:17
229 67:3	30 26:17 27:2,7	44 106:9,13	64 5:11 44:1
22nd 62:7	119:2	446 45:3	66 113:11,15
232 5:6	30000365879	4469 45:4,6	166:17,18
2363 119:5	197:16	4766 73:12	661 72:4
2372 75:25	30s 74:25	48 65:1	6693 73:18
2398 82:22 125:14	30xi00157300	49 5:15	69 32:7
24 5:18 77:24	200:4	5	7
82:21	3149 198:7,10	5 34:16,23 71:1,8,8	7/11/84 185:7
2454 88:20	3173 148:24	128:23 129:3	7/13/66 74:14
25 5:14 31:9,10	3194 54:11	130:6,7	7/8/74 106:7
47:10	32 17:7 85:25	5/10/71 75:22	107:14,15
2523 102:11	325 188:19,20	5/14/74 94:1	70 90:25
155:11	330 188:20	5/21/85 173:24	7014 76:25
2530 106:9 160:4	3314 127:13,14	5/23/2000 149:22	7046 5:11 64:11,19
160:21	128:8	5/9/74 105:18	7049-16as 1:15
254 5:9	3320 5:7	50 31:11 60:20	7070 5:12 42:25
2544 144:4	3400 3:9	158:19 169:6	90:24 91:2,4
2563 52:20	3431 5:8 171:11,13	501 165:2	7085 37:20
25834 72:15	36 37:8 39:12 97:6	50s 75:6	7089 32:7
25th 40:20 67:3	165:24 166:2	52 52:21	70s 7:18,20 22:13
110:19	3695-100 127:21	53 5:15 49:9,14	31:5 122:5
2675 40:15	3695-45 61:8	55 22:11 75:25	71 126:23 172:25
269 61:6,11	3695-61 5:9	56 2:2 5:17,18	178:18
270 5:7 61:7	37 184:22,22	24:21,25 25:3	7175 110:15
2767 123:4	38 5:12 36:18,19	80:17	718 2:23
28 12:20 14:7	90:23 91:4,11,13		
137:13,15 183:23	91:14 104:19		

[7214 - alcohol]

Page 3

<p>7214 8:22 168:14 73 66:10 88:17,17 88:18 89:19 90:23 162:11 74 96:17 106:3 162:12 75 8:22 9:1 16:23 169:13 175:19 75270 3:9 76 111:25 7621 165:12 7834 5:13 109:5,15 109:19 142:20 7835 108:4 141:18 79 182:9 183:21 797 113:21</p>	<p>9</p> <p>9 27:20 71:10 82:17 123:9 9/3/71 82:18 90-28 167:9,13 90-30 112:20,22 113:16 9041 66:11,16 9070 43:6 91 5:12 9382 44:21 96 37:21 38:3 113:11,15 166:17 166:18 97 5:5 121:3 123:2 983-1234 2:23 9:10 171:21 9:29 2:5</p>	<p>acid 33:9 38:14,22 38:23 acknowledged 104:1 acreage 105:4,14 acres 105:9 acting 12:11 actinolite 10:19 78:10,12,15 85:14 85:16 86:25 88:24 89:20 93:21 153:14 154:3 155:2 action 60:3 activities 8:6 11:6 activity 33:19 actual 50:20 58:4 68:18 69:24 76:16 172:20 174:9,18 175:3 176:11 178:12 186:15 193:24 add 15:18 28:6 added 15:1 17:8 28:13 adding 36:23 addition 48:19 60:11 additional 43:11 83:15,16 159:3 176:3 additive 126:14 address 165:1,10 adds 28:4 adjacent 123:21 adjustor 197:11 197:23 administration 7:24 8:1 9:12 17:3 21:11</p>	<p>admissible 198:14 admission 61:14 199:15,15 admitted 24:24 25:20 29:8 49:13 56:16 64:15 91:3 97:14 109:18 129:11 171:12 adopt 28:20 adverse 194:11 ae 193:20 196:3 aer 196:15,15 aerosol 83:22 afternoon 136:8 136:10,11 agency 12:2,4 197:25 agency's 12:7,9 agent 38:14 agents 38:23 ago 16:9 172:23 agree 123:20 125:4,11 127:4 128:21 154:21 177:10 188:18 189:25 190:12 agreement 143:10 ahead 42:18 108:6 109:18 113:6 117:9 129:9 154:16 164:18 184:22 air 20:15,15 116:10 175:4,7 176:11,18 al 1:7,13,18,24 alabama 31:13 121:18 alcohol 35:3 42:14 43:17 44:11</p>
<p>8</p> <p>8 10:8 27:19,20 160:3 168:20 8/17 144:24 80 124:25 132:12 156:12 159:20 800 3:5 8011 5:14 25:15,16 25:21 8012 5:15 49:8,14 8056 98:6 8196 5:16 29:3,5,9 83 10:8 8382 70:8,16 8396 5:17 56:12,17 84 170:2 85 190:2 86 190:2 8671 80:16 875 131:17 8897 5:18 24:21,25 89 44:14 8971 81:7</p>	<p>a</p> <p>a.m. 2:5 47:14,14 96:10,10 171:21 abandoned 16:14 abbreviated 40:25 ability 48:24 146:3 200:9 able 22:3 48:5 50:13 52:7 116:15 154:22 160:12 absence 174:24 absolutely 127:6 academic 101:13 101:19 accept 199:6 accounted 45:11 accurate 53:6 127:5 148:18 200:8 accuse 166:23 achieved 53:13</p>		

[allegations - asbestos]

Page 4

<p>allegations 18:5 18:13,13 116:24 194:4 alleged 194:15 allot 62:1 allow 9:11 19:3 58:19 alp 60:17 alpine 122:8 alps 81:1 122:7 altered 72:4,8 73:13,19 alternative 31:6 31:10 ambiguous 150:15 america 1:7,13,18 1:24 americans 145:14 amorphous 99:17 amount 11:16,21 13:21 27:11 176:4 178:6 amounts 74:3 amphibole 26:9,19 30:6 35:5,23 50:5 50:12,13,14 51:6,9 51:11,12,13,18,19 51:22 65:15 69:8 69:8,11,22,25 70:3 70:5 72:5,8 73:4,7 73:9,13,19 79:5,17 79:17 180:3 181:1 amphiboles 34:15 36:4 72:12 79:3 79:19 112:12,13 112:13 amphibolitic 142:1 ana 2:12 analysis 8:5 9:21 9:25 10:24 12:15</p>	<p>12:22,24 13:1,2,9 13:18,24 14:1,9,21 16:21,23 17:5,7 20:2,12,25 21:9 24:13 26:11,24 27:15 35:1 60:1 64:1,3 74:1 78:7 84:11 101:25 167:20 179:1 182:3,4,7,8 196:1 analyst 197:18 analytical 92:18 172:13,16,23 analyze 66:23 analyzed 26:8 92:7 106:15 120:7 163:5 179:23 ancient 74:21 andrea 2:21 200:3 200:13 angstrom 99:11 animal 61:5 62:20 63:18 anomalous 78:1 answer 23:4 24:14 113:1 117:24 143:16 147:13 149:8 150:21 152:18 153:8 155:7 159:4,10 166:10 174:22 176:16 177:13 180:20 185:11 189:4 191:4,5 answered 67:3 94:21 110:19,22 110:23 116:12,17 117:4 149:11 152:17 155:4 answers 148:25</p>	<p>anthophyllite 37:2 37:5 92:20,25 93:15,19,21 113:22,24,25 153:14 154:4 155:3 167:15,18 180:1,4,7,17,24 181:16 antitrust 56:23 57:1 anybody 57:11 101:15,21 149:18 anyone's 114:7 176:17 apologies 188:7 192:11,12 apologize 95:9 105:25 109:13 apparently 139:13 appear 35:5,24 86:23 90:19 123:16 125:4,6,7 178:7 appearances 3:1 6:13 appeared 8:1,3,14 46:21 92:18 appears 14:16 23:9 79:12 81:11 99:12 123:19 125:8 appellate 1:2 apples 177:21,25 178:1 application 14:1 applied 26:11,17 approach 138:5 168:7 appropriate 67:1 approved 107:13</p>	<p>approximately 84:5 140:12 176:5 180:6 area 45:17 64:14 76:5 94:7,10 105:10 122:7 189:17 areas 64:7,8 122:8 argonaut 104:18 106:4 argue 80:8 152:12 192:7,9 argument 140:25 143:15 147:11 153:6 189:2 190:10 192:1 argumentative 124:18 article 57:15 58:1 58:4 59:12,20,23 60:2,6,9 131:17 133:1 172:5,5 173:5 asbestiform 16:18 43:13 50:3,10 51:25 65:17 78:16 84:1 163:6 167:20 172:6 183:15,17 asbestos 8:12 10:9 10:10 11:7,10,21 12:3 15:2 16:13 17:13 18:14,19 19:12 20:14 21:25 22:4,8,19,20 23:1 23:6,7,9 24:17 25:12 26:14 27:16 28:6,7 30:3,5 34:21 35:21 36:3 36:5,8,13,16,23 37:4 48:12 50:6,8 50:10,15,15,18,18</p>
---	--	---	--

[asbestos - babymate]

Page 5

51:12,13 52:9 53:3 56:1,8 57:4 57:12,13 64:4 65:2,3 66:2,5,23 67:12,17 68:20,24 69:9,10,13,14,17 69:19,20 70:18,18 70:20 71:5,14,16 71:19,21,23 72:1,3 72:5,7,9,16,19,24 72:25 73:4,23,24 74:6,7,11,20 75:20 75:21 76:8,13,14 76:21,23,24 77:2 78:7,8,11,13,17,18 78:22,25 79:4,13 79:18,19 80:5 81:8,19,25 82:1,7 82:13,15 83:20 84:11,14 85:1,3,10 85:11,16,17,18 86:4,17,22,23,25 87:1,1,3 88:1,6,12 88:14,22 89:6,14 89:16,17,24,25 90:3,3 92:9,12,19 92:21,22 93:2,12 93:17,23,24 100:22,25 101:7 101:10,14,21 102:1,3 105:5,11 106:22 107:10,15 111:9 112:3,13 113:24 114:8 115:24 116:24 117:1 123:14,16 123:19,21,23 124:1,11,12,13,16 124:17,21,22 125:9 126:3,8 137:23 138:17,20	138:22,23 139:1,8 140:21 141:4,7,13 142:2 150:7 151:4 151:24 152:1,4,6,7 152:21 153:11,15 158:14,24 159:6 159:17 161:2,3 162:22,22 163:9 163:13,17 167:16 167:22 172:2 174:10,18,24 175:3,5,9,12 176:3 176:11,18 178:7 183:11 185:2,19 187:18 190:13 195:6 ashton 57:25 58:2 76:2 126:22,23 143:1 145:8,16 146:11,15 147:7 aside 62:2,11,14 63:1,11 asked 39:20 57:15 67:2,22 94:21 110:18,22,23 116:12,17 117:4 117:16 119:1,17 119:18 120:12 122:16,19 123:16 125:14,18 126:21 134:13 137:10 144:15 152:16 155:4,13 160:4 169:2 asking 79:12 149:25 159:16 173:4 175:15 176:22 177:22 191:7 aspirin 13:21,22 13:23	assess 64:4 194:25 assessed 43:18 195:2,4,6 199:17 assessing 53:3 174:18 assessment 169:11 169:15,20 174:2,4 184:2,3 186:18,24 188:6,8 194:13 196:14,24 197:11 197:13 198:20 assessor 13:17 assistance 149:12 150:4 associated 72:7 121:20 assume 11:20 20:13 75:5 assumed 17:5,14 18:1 19:10 assuming 14:2 17:20 assumption 20:2,3 assurance 105:6 atmosphere 107:6 atmospheric 175:11 attorney 94:6 attorneys 3:10,17 attributable 35:3 attributed 12:3 audible 6:5 august 2:5 6:12 82:17 123:9 126:23 127:17 137:13,15 200:13 author 14:16,17 16:25 17:23 35:11 35:12,22 145:20 available 121:17 122:14 149:20,21	avenue 2:22 3:3,5 average 17:13 avoid 81:13 aware 9:3,24 10:18 12:14 18:12 18:18 25:10 36:11 37:10 54:6 55:3 55:22 58:17 66:6 88:13 114:4,6,13 120:11,14 126:7 131:9 149:19 176:17 182:18,21 194:14 awareness 197:20 b b 5:2 139:16 babies 102:6 baby 14:1 79:1 97:21 99:5 100:21 101:10 102:1,3 119:11 123:13,25 124:4,4,23 125:7,8 125:22 126:5 139:21 150:8 153:16,18 156:21 156:23,25 157:4,5 157:6,7,7,12 158:1 158:1 160:7 162:15 163:2,18 163:22 164:6,10 164:12,20 165:3,6 165:10 166:5,17 166:20 167:9 171:3 172:3 174:10 175:2 176:24 189:1 190:20 191:14 193:24 194:15 195:10 babymate 120:1,4 120:15
--	---	--	--

[back - called]

Page 6

back 7:15,19 16:22 17:6,7 32:4 38:6 39:12,18,23 41:7 42:24 47:10 62:10 63:10,23 85:21 87:11 95:8 96:3,4 97:5 102:9 106:17 135:3 168:8 173:9 193:12 198:8 background 11:9 11:17 16:6 19:14 20:15,18 126:11 150:25 176:4 178:9,14 bad 143:22,24 badges 134:24 bank 3:3 barden 1:4 3:10 6:8 bardens 6:18 barely 16:17 based 13:16 17:23 20:12 24:12 26:23 33:18 34:1 36:1 37:10 63:17 68:18 68:22 81:14 84:11 86:11 94:24 101:24 138:12 146:13 165:1 178:11 187:6 189:14 190:7 196:4,9,10 197:6 198:16 basically 130:18 basis 12:1 76:5 bates 42:25 43:5,6 77:15 92:2 battelle 69:4,5,15 69:16,18,22 70:17 70:21 71:14 75:19	149:17 bed 8:2 21:1 beg 59:14 behalf 6:21 believe 29:3 37:21 49:8 61:7 64:17 67:8 68:15 98:6 115:10 120:13 121:21 126:22 131:11 138:19 149:14 153:3 195:16 198:13 believed 77:24 140:7 bench 113:20 beneficiated 121:17 beneficiation 163:10 benefit 147:4,17 best 200:8 beta 113:12 better 33:5,10 121:3 123:1 beyond 182:20 bigger 60:21 137:7 biggest 138:22 bill 126:22,23 143:1 binder 32:7 70:12 104:16 170:6,10 170:11,14,16,16 170:18,19 binders 168:8 170:4,11 bit 8:16 40:20 47:24 117:14 152:25 162:13 178:16 184:11 bits 81:18,23	blount 114:2,9,10 116:5 blount's 115:12 board 68:6 88:22 89:23 102:10 103:11 110:21 111:10,17 115:1 118:5,8 141:19 boards 68:2,3,10 100:18 116:24 117:18,18,20 118:2,22 148:8,17 148:18 bob 164:8 bodies 137:5 154:24,24 body 16:4 65:19 65:22,23 66:4 104:18,20,22,25 105:4,6,8,13 106:2 106:4,6 book 82:23,24 106:12 143:18 booklet 143:10 145:12 146:16 bottle 153:19 bottles 74:23 75:8 bottom 81:18 98:2 107:3 169:6 173:14 179:12 183:19 boy 159:5 brake 107:2,5 break 47:1,5,11 96:1,5 134:22 183:6 192:24 193:13 198:24 breaking 120:24 brenntag 1:7,13 1:18,24	briefly 39:18,23 168:3 196:7 bring 41:20 148:22 brochure 108:15 108:25 109:24,25 110:10,12 brook 172:1 brought 104:5 167:24 brown 174:1 184:8 brown's 186:23 brunswick 2:3 bundles 84:2 business 138:20 139:5 156:13 159:20 butanol 33:8,8 38:14,22 buy 158:10
			c
			c 2:12 92:1,5 93:11 140:6 c.s.r. 200:3 calcium 92:24 calculated 184:12 184:13 188:8 calculation 14:5 20:6,10 176:6 189:21 calculations 18:3 california 31:13 call 100:11 171:2 171:22 174:1 called 28:7 46:16 92:19,22 103:22 122:9 126:15 133:19 145:21 146:4 172:4

[calls - comment]

Page 7

<p>calls 23:2 24:2 62:15 76:10 88:7 112:24 171:16 186:6,8 canada 139:6 cancer 15:1 17:9 42:8 43:12,14,21 44:2,4 45:19,22 46:11 cancers 41:6,7 42:2,7,9 cans 62:2,10 carbonates 72:21 121:20 carolina 121:18 carolinas 31:14 carry 147:3 162:9 case 11:7,18,19 12:24 13:20 14:2 14:11 17:20 19:12 19:23 20:13 47:8 48:4,11 83:4 115:9 125:19 135:1 149:24 150:23 175:18 177:15 188:22 189:24 194:20 196:4,21 197:4 cases 154:7 180:3 183:11 191:13 195:16 causality 195:3 199:17 causation 191:17 cause 43:17 58:11 88:17 138:11 158:8 191:22 199:20 caused 199:14 causes 44:15,19</p>	<p>cc 176:5,25 177:7 177:16 ccr 2:21 cell 6:5 47:17 96:13 136:4 center 65:19,23 66:4 85:5 164:8 164:13 165:2,5,9 central 99:12 certain 11:13 13:21 22:3 certainly 21:11 59:22 60:20 122:3 122:4 158:5 162:5 166:2 179:6 180:25 certification 200:1 certified 200:4,14 certify 200:5 cetera 72:22 148:21 197:13 chalk 81:22 challenge 29:22 changes 157:16 channel 137:3,7 character 65:17 charles 1:9 3:11 chart 37:6 44:13 75:18 81:25 83:23 94:13 114:2 chat 168:3 checking 38:8 chemical 33:9 36:13 73:10 90:17 183:10 chemically 31:25 121:9 children 154:24 chisone 80:25 122:10 126:25 129:20,22,25</p>	<p>141:15,16 145:22 146:2 chlorite 35:2 92:17 chose 150:20,21 chris 3:7 6:17,17 christopher 3:2 chrysotile 22:7 23:18 26:10 37:8 39:3,5,6,7,13 65:25 74:11 83:12 84:2 93:25 97:7 97:24,25 99:9,14 99:15,18,21 100:2 100:10 103:16 106:23,24,25 107:1 108:25 110:6 139:6,16,18 140:7,14,15 141:12 143:6,21 147:21,23 148:5 155:3,15,23 156:1 157:25 162:23 181:22 chrysotiles 141:25 circle 51:14,25 52:4 circulated 107:6 cirrhosis 43:15 citizen 8:23 9:11 169:1 citizen's 8:16 9:8 9:10 14:7 21:1 167:24 168:4 171:25 173:6,9 179:2 182:13,16 182:23 183:1 citric 33:9 38:14 38:22,22 claim 68:4 193:18 193:19 194:14</p>	<p>197:10 claimed 18:19 141:6 claims 194:2 196:10 197:6,17 197:23 clarification 70:2 152:25 clarified 152:5 classified 141:24 clean 33:10 63:12 83:25 clear 35:8 52:13 53:25 119:22,25 151:6 163:20 client 167:13 close 88:23 closed 60:15 122:3 closer 162:13 coal 45:16 code 57:1,3,5,10 62:9 codes 113:9 cohen 3:2 collect 194:17 college 35:17 color 86:13 colorado 29:13,16 30:3 77:14,19 78:6 155:13 combined 187:7 come 31:24 47:10 95:8 96:4 135:3 165:16 170:7 183:4 186:19 192:25 198:8 comes 110:8 coming 91:15 142:12 comment 72:8 94:18 148:14</p>
---	---	--	---

[comment - contaminants]

Page 8

<p>164:16 172:12 191:3 195:20 commenting 81:13 comments 198:3 commercial 32:17 139:11 172:6 commercially 32:15 166:21 commissioned 21:17,23 23:20 commissioner 12:11 common 43:16 50:2 92:17 183:16 companies 10:25 32:22 120:7,9 company 8:18 9:5 13:7,11 18:13 21:9,17 24:7 58:14 59:25 62:13 62:19 63:18 93:10 93:11 100:25 102:5 103:4 113:9 124:8,24 130:8 131:2 137:24 138:18,22,23 139:8 141:7 149:25 150:25 156:20,21,22,23 156:23,25 157:1,5 157:8,10,12 158:1 158:2,18,25 159:2 160:8 162:16 164:7,11,12,21 165:3,6 171:3 190:8,20 195:1,3 197:10 company's 156:13 159:20 162:20 165:10 191:6</p>	<p>compare 20:15 41:3 compares 121:7 122:24 comparing 14:10 177:21,25 comparison 27:5,6 28:17 compelled 9:17 competitive 11:3 75:16 174:15 competitor 32:18 complete 197:21 completed 54:25 55:14,24 194:5 completely 151:9 completeness 86:8 179:11,16,21 compliance 200:6 components 48:15 65:7,19,22 composition 73:11 73:22 183:10 compressed 200:8 compromise 58:3 compton 57:17 concentrate 31:1 74:2 concentration 7:14 21:13,16,19 22:5,16 23:18 25:7,11 27:21 28:24 29:14,15 30:15,17,20 concern 8:2 9:19 11:16 24:16 91:24 92:13 193:16 concerned 60:4 147:5,17 185:25 concerns 8:14 11:15 56:23</p>	<p>conclude 12:2 14:25 30:24 34:20 67:17 115:17 131:15 concluded 11:6 16:5 17:24 30:25 35:1,4 84:13 100:13 120:16 121:23 143:18 concludes 12:5 concluding 7:4 19:22 conclusion 8:10 9:4 11:12,22 12:7 12:9 16:8,20 17:23 20:12,16 24:1,7 26:23 28:21,23,25 45:24 46:7,9 84:10 141:9 163:11 183:5 186:20 conclusions 8:17 28:9 46:15,17 64:25 67:19 conclusively 30:7 99:15 conduct 48:6 62:19 conducted 10:23 17:19 32:3 38:17 83:18 confidential 32:11 32:12,14 142:21 confirm 26:13 69:10 191:15 194:24 confirmed 26:18 73:5 190:19 193:25 confirming 55:19 94:9,16</p>	<p>confused 103:21 confusion 67:12 consensus 16:11 consequence 178:7 consider 76:4 102:17 considered 21:24 60:21 139:19 considering 104:20 consistent 46:13 consists 132:14 133:24 constructed 131:14 construction 90:20 consultant 29:13 consumer 3:18 6:22 9:13 90:10 90:15 157:16 178:22 consumers 151:1 154:22 consumption 43:17 contact 9:12 contain 140:7 153:25 154:3,7 181:19 contained 27:2 152:3 containing 26:17 86:11 contains 155:8 contaminant 28:5 139:19 contaminants 72:13,21 150:7,8</p>
---	--	--	--

[contaminated - court]

Page 9

contaminated 28:11,13,14 36:16 179:25	107:25 109:11 119:6,7,10 120:21 127:25 128:1	130:10 131:19 132:12 140:9,13 161:10,11,25	court 1:1 6:1,3,20 7:2 13:3,6,8,12 18:9,16,23,25 19:3
contamination 84:5 98:3 102:18 106:22 126:10,11 172:2	137:18 138:1,2,3,6 172:4 173:4 core 99:12,13 104:19	179:11,22 182:8 185:2 187:18 cosmetics 171:23 179:24 185:19	19:6,17 21:5 23:4 23:11 24:4,10,24 25:20 29:8 33:16 33:23 37:18,25 38:2,4 40:21,23
contemplating 104:23 105:15	corporate 7:5 24:6 79:16 80:11	counsel 13:3,3 19:17 37:25 41:5	41:12,15,19,22 42:3,10,18,21 46:2 47:1,4,13,15,17,21
content 26:14 35:3 108:22 139:16 142:2 161:3 163:5	correct 48:6 111:15,16 117:20 118:6 120:5	68:5 79:10 87:5 94:22 96:8,23 103:18 107:24	49:13 54:17,20,22 55:12 56:16 57:7 57:20 58:7,13,16
contention 68:23	123:25 124:22 125:22 126:5	108:1 109:9 115:8 116:1 117:7 118:3	58:19,23,25 59:3 61:14,18 62:16 63:15,21 64:15
contents 145:11 187:25	127:5,9 131:4,7,8 132:17,22 133:2,6	118:25 120:23 123:5,7 128:3 130:17 144:10	65:11 66:14 67:4 67:6,15,18 70:6,9 70:23 71:2 75:3
context 79:23 110:20 124:6,7 143:17	133:9,11,22 134:2 139:22 140:9,14 142:13,16 145:19	149:13 150:5 173:15 179:9 180:10 190:24	76:11 77:5 79:8 79:20,25 80:8,9 82:4,11,24 83:1
continually 46:1 79:12 94:23	148:5,25 149:13 149:14,18,22 150:9 151:10,11	191:21 192:4 194:19 195:12,21 198:17 199:1	86:9,15,20 87:4,7 87:19,23 88:9 90:25 91:3,13,15
continuation 199:21	151:14 152:15,23 153:2 154:6,11 155:3,8,16,23	count 76:5 77:23 162:19,20 199:4,4 199:8	91:17 93:7 94:7 94:10,14,17 95:3,6 95:8,14,17,21,25
continue 47:21 54:22 79:11 123:11 136:6 160:1 192:13	157:6,10,17 160:8 161:3,6,10,14 162:1,16,22,25	counterpart 183:13	96:11,13,22 97:2,8 97:14,17 98:9,12 98:18,20,22 101:4
continued 6:7 7:10 100:22	163:10,14,21 165:7,18 166:1,3 166:20,21 167:7	counting 199:3 countries 92:8 146:17	103:9,11,20 104:2 104:5,7,11 107:24 108:1,6 109:7,13
continues 98:20 197:21	167:10,16 168:20 169:11 171:7,19 172:17 173:3,7	country 189:1 county 1:1 2:2 116:9 200:15	109:17 110:23 111:3,5,12 113:1,5 114:16,20,22,24
continuing 78:9	176:13 177:3,6,20 179:5 180:17,24 181:14,17,22,23	couple 9:21 81:12 100:18	115:13,16,20,25 116:3,13,19 117:6 117:9,23 118:13
controls 128:24	181:25 190:8 cosmetic 10:8 11:8 12:3,6 31:14 99:6	course 31:20 41:16 58:18 100:12 120:19 140:16	
conversation 136:13	113:13,14,18		
conversion 17:15			
convert 18:25			
copies 68:3 98:9 146:24 148:9 160:13			
copy 46:16 56:4 89:2 98:7,10			

[court - depends]

Page 10

119:18,23 120:2 124:19 127:14,19 127:24 128:3,6,15 128:25 129:5,9,11 132:6 134:20 135:7 136:2,4 137:14,16,21 138:6,9 141:1 143:16 144:17 147:12 148:1,13 149:5,7 152:12,18 153:7 155:6 159:10,13 160:1 160:14,16,19,22 160:24 161:17 164:2,17 166:11 168:9,11 170:13 170:19,22,24 171:12 174:21 176:15 179:19 180:12 181:6 185:10 187:13 188:12 189:3 190:11,24 191:2 191:20,24 192:2,4 192:6,9,12,17,20 192:23 193:3,8,12 193:16 194:5,7 195:19,23 196:8 196:11,23 197:1,7 198:3,8,10,14 199:8 200:4,14 court's 96:3 111:19 129:11 180:11 courtesy 40:13 42:5 courthouse 2:2 200:15 courtroom 189:12	cover 25:8 94:13 105:8 covered 40:20 42:10,12,15 67:7,8 67:18 94:7,10 95:3,6,12,15,20,21 97:2 110:24 111:5 111:20 116:19 149:3,6 create 32:16 58:16 127:20 criteria 86:13 crocidolite 28:8,14 crosetto 80:25 81:6 126:25 127:11 129:22 130:3,11,19,23 131:3 132:15 133:5 134:1,4 136:13 cross 4:2 7:4,10 58:3 155:11 160:12 crr 2:21 crystal 180:2 ctfa 48:12 50:1 51:3,10 172:17,21 cumulative 94:6 94:21 144:10 149:3 178:6 current 16:12 200:6 currently 130:9 customers 154:22 cyprus 165:19,20 165:20	dallas 3:9 damage 45:20 darlene 1:10 3:11 6:9 dartmouth 34:12 34:14,20 35:10,14 35:16,19,19 data 10:3 11:5 43:20 169:24 174:9,9 178:12 183:2,4 190:13 date 2:5 38:8 123:8 144:25 145:2 197:20 200:14 dated 126:22 dates 33:18,18 38:8 149:19 david 1:9 3:11 6:9 day 13:22,23 62:9 day's 62:6,8,12 63:7,8 199:21 days 161:12,22 dc 56:22 de 57:25 deal 174:14 198:15 dealing 24:17 dealt 130:18 deaths 44:11,15,18 44:22 45:7 debating 102:22 debris 107:5 decades 80:7 139:5 december 197:15 197:17 decided 108:14 decision 169:21 decisions 143:9 154:23	defendants 1:8,14 1:19,25 3:17 6:21 defense 5:11,12,13 5:14,15,16,17,18 24:21,25 25:14,16 25:21 29:2,5,9 32:7 37:20 44:20 49:7,14 52:19 56:12,17 64:11,19 66:11,16 70:8,16 76:25 90:24 91:4 98:5 108:3 109:5 109:15,19 137:12 138:2 141:18 142:20 168:14 169:7 170:6 198:17 define 154:15 defined 151:25 definition 16:18 36:4 53:21 91:7 92:12,16,22 146:5 146:9 definitions 91:23 delayed 146:25 deliberately 36:16 demands 21:10 demonstrated 99:15 108:22 denial 185:1,13,16 185:17 186:1 187:16 188:2,4 denied 185:8 187:9 199:13 density 22:5 30:2 denying 186:13,14 department 14:12 183:14 191:6,7 197:19,20 depends 134:8
	d		
	d 5:1 165:12 d'angela 1:15 3:12 6:10		

[deposit - doctor]

Page 11

deposit 31:8,20 130:4 deposition 115:9 deposits 31:12 deputy 171:22 derivation 142:1 describe 30:11 71:17 100:2,4 142:8,15 165:19 described 75:16 167:11 180:22 describes 27:23 39:5,6,7 73:21 79:5 86:5 102:21 131:12 142:17 describing 69:19 description 5:4 38:21 93:22 133:16 designation 62:6 63:6 166:6 designations 166:18 designee 80:12 destroy 56:25 103:15 155:14,25 156:10 159:6,17 destroyed 56:11 158:11 destroying 56:4 157:25 detect 22:3,7 50:13 52:4 139:14 detectability 180:5 181:20 detectable 92:9 detected 35:4,4,23 50:3 182:6 detection 17:11 20:7	determinable 74:3 determination 179:20 determine 9:18 13:19 14:5 50:11 51:12 55:6 155:14 163:5 180:2 182:5 determined 139:17 determining 50:8 developed 28:2 130:13 194:22 developing 23:17 devices 6:5 diagnosis 194:20 dialogue 7:23 diametrically 151:9 diane 3:14 6:25 difference 52:8 166:16 differences 151:3 different 11:16 20:17 30:22 31:11 41:11,14,17 42:7 77:5 81:4 92:7,8,8 118:21 122:17 130:3 134:12 157:15 158:19 165:3,10 167:7 184:17 186:15 194:11 196:21 diffraction 50:12 51:5 61:21 73:10 99:16 179:24 180:25 digging 175:13 direct 19:1 58:5,15 direction 57:2 director 14:14 76:3 81:12 145:9	171:22 disagreed 140:18 140:22 discontinuous 99:13 discovered 93:3 discrete 65:16 discuss 96:18 172:21 discussed 52:25 145:11 148:8 153:13 184:11 discusses 145:3 discussing 58:1 143:13 discussion 23:12 43:1 96:9 135:6 170:25 172:24 173:18 184:2 192:6 discussions 34:5 47:7 135:1 disease 45:15 diseases 43:16 44:10 45:12 dish 33:3 dispersive 182:4 disputed 196:20 disputing 67:6 disregard 93:8 94:18 114:17 148:2 192:1 disseminated 65:16 dissimilar 45:8 46:17 distinct 132:14 133:17,24 distinguish 50:9 distributed 54:1	distribution 146:16 district 131:19 dividing 136:16 division 1:1 145:9 157:1,5,7,9 179:23 divisions 130:3 131:9 docket 1:2,2 doctor 8:23 9:3,7 9:20,24 10:5,22 11:12,25 12:14,19 13:25 15:8 16:24 18:18 19:9 20:22 20:25 21:12,21 22:12 23:15 24:20 25:3,10,24 26:20 30:14 31:2,22 32:6,9 33:18 34:8 36:11,18 37:6 38:6 39:17 40:16 42:24,25 44:1 45:14 48:13 49:17 50:22 52:11,22 54:6,16,24 55:3 56:10,20 57:10,14 59:12,19 60:5 61:4,6,20 62:18 63:3,9,23 64:11 66:6,16 67:25 69:7 70:11 71:4 71:18 72:16 73:16 74:14 75:5,24 76:1,13,20 77:13 78:6,9 80:16 81:7 82:6,14 83:3,10 85:12,13,22,24 86:25 87:13,15 88:21 89:9,19 90:5,23 91:20 93:10 95:20,24
---	--	---	---

96:16 97:5,17,19 98:5,12,17 100:16 101:24 102:5,9,12 102:19 103:2 104:10,14,16 105:1,17,20,25 106:8 107:9,17 109:3,22 110:10 110:15 111:1,8,15 111:19 112:16,22 113:8 114:12 115:23 116:23 doctors 194:16 document 22:9,12 27:20 32:5 38:16 41:13 49:18 52:22 54:11 55:7,22 58:2 70:7 75:24 76:13,14 77:6,16 79:23,25 80:11 81:24 82:3,6 83:22 84:12 85:25 87:5,8,9,10,15 89:6 90:22 91:12 92:1,3 94:1 95:3 97:8,20 103:22 104:15 105:18 106:7,8 109:4 117:16 118:6 119:19,21 120:12 125:15 126:21 128:5 129:1 130:7 130:18 137:10,11 137:25 141:21 142:20,21 144:7 144:13 146:8 147:14,18 149:9 155:12 157:24 158:22 159:5,17 159:25 160:3,10 160:20 161:18	165:12 170:5 178:16 197:21 documentation 10:16 12:18 101:16 190:18 documented 195:9 documents 30:18 31:3 34:1 37:11 55:19,21 56:11 57:24 68:13,17,19 70:17,19 74:13,19 74:22 79:7,11,21 84:25 85:2,18,19 101:25 102:2 111:8,14 112:14 117:19 118:11,16 118:17,21,23 125:13 138:12 139:24 148:19 150:1 159:19 190:7,12 197:18 197:19 doing 22:13,20 36:7,12 80:1 88:1 103:25 120:10 139:10 157:21 166:22,24 167:4 194:2 domestic 121:16 121:17 doped 37:1 39:3,9 doping 39:15 dose 14:10 double 122:4,21 douglas 1:4 3:10 6:8 douiller 172:1 185:3,19 187:18 dozen 169:13 dr 7:5,11,13,17 8:15 9:1 13:16	17:14 18:1,2,12,19 19:9,21 22:2,13 23:17 24:7,12 25:4,4,5,6,10,25 26:3,6,23 27:10,11 27:16,19,21 28:22 29:3,12 33:21,25 34:14,19,19,23 35:13 37:22 39:24 41:1 43:2 46:7,14 46:19 47:23 49:10 50:4 53:19 54:2 55:20 57:16,23,25 58:2 60:13 63:25 64:1,22,25 65:2,13 67:23 71:1 76:3 78:20,24 81:14 84:15,16 85:4,8 86:22 88:11,11 93:1,20 100:6,11 100:11 103:8 112:5 114:2,9,10 115:12 116:5 120:20 136:10 138:7 146:7 149:3 161:17 168:8,11 169:16,17,19,20 170:3 175:25 188:7,7 189:5,18 190:15 193:3 198:25 199:1 draft 39:21 40:11 40:12,17 41:25 42:4 drafted 186:12,14 drew 154:10,12,14 drive 137:2 drug 7:24,25 9:12 17:2 21:11 51:17 51:18	drum 80:24 126:24 due 17:11,14 84:7 dug 134:6 dust 45:15,16,17 dusted 15:6 dutch 90:6,10,14 92:11 e e 2:23 5:1,2 129:20 136:1,1 141:13 197:18 earlier 20:5 100:8 134:3 166:16 earliest 75:6 early 21:19 22:13 31:5 34:4 easier 168:10 education 80:6 edxa 182:5,7 effect 101:17,23 effects 185:2,18 187:17,17 effort 32:1 48:21 49:4 efforts 21:21 158:14 eight 20:23 188:15 198:20 eighth 15:3,8,9 20:19 either 89:13 113:11 145:3 170:6 electron 48:20 65:4 99:16 139:11 161:14,15 162:3 180:19 electronics 32:21 elements 92:23
--	--	---	---

[eleven - expect]

Page 13

<p>eleven 187:1 elicited 195:12 198:17 elizabeth 1:21 3:12 6:11 elm 3:8 employed 17:2 enabled 152:25 ends 13:14 19:5 42:22 59:10 67:20 80:14 95:18 104:8 115:21 129:10 192:22 193:11 energy 182:4 england 136:25 146:17 english 108:16 109:24 110:1,4,9 137:3,7 143:20 146:17 enjoy 47:11 135:3 enormously 193:25 entering 6:1 47:15 96:11 136:2 enters 6:2 47:16 96:12 136:3 entire 179:21 195:5 entities 99:8 entitled 131:18 172:6 187:15 entries 96:17 entry 75:14 84:19 97:7 116:7 environment 11:24 environmental 11:9 16:6 epidemiologist 39:25 40:3</p>	<p>epidemiology 14:22 39:19 40:1 equally 163:2 error 17:15 20:3 197:5 esophageal 42:8 43:13 esq 2:18 3:2,4,7,14 3:14 essentially 19:22 183:10 197:22 establish 94:25 established 79:17 estimate 11:7 140:1 estimated 15:7 26:10 31:9 178:8 178:13 estimates 17:8 et 1:7,13,18,24 72:22 148:21 197:12 etheridge 1:9,10 3:11,11 6:9 etheridges 6:19 europe 132:13 evaluate 194:20 evaluated 28:2 31:12 190:2 evaluating 174:14 evaluation 17:19 19:25 25:9 90:12 evaluations 191:13 event 54:9 74:14 74:23 110:10 194:11,12,17 197:16 198:11 everybody 62:2 101:1</p>	<p>everybody's 117:10 everyone's 119:22 187:6 evidence 5:3 8:22 12:4 22:11 24:22 25:1,16,18,22 29:4 29:10 37:21 44:6 46:20 49:15 52:21 54:19 56:13,18 57:24 60:23 64:12 64:20 81:25 90:24 91:5 94:24 97:11 97:16 99:8 101:18 101:22 105:11 106:18 109:6,16 109:20 112:8 117:22 128:11 129:14 144:14,16 148:24 163:1 171:9,14 evidencing 197:24 exact 108:18 120:18 131:10 exactly 41:5 90:19 117:19 151:2 154:14 194:1 198:10 examination 7:4 7:10 26:16,21 106:3 117:12 155:10 160:12 examinations 147:22 examine 29:19 examined 30:12 58:3 66:25 106:15 180:1 182:4 example 62:7 68:9 69:21 92:20 118:4 194:21,22 197:10</p>	<p>excess 41:7 43:13 44:10 45:10 excessive 43:17 excluded 196:3 197:5 excuse 35:4 144:17 192:4 193:3 exhibit 5:5,6,7,8,9 5:10,11,12,13,14 5:15,16,17,18 22:10 24:21,25 25:14,16,21 29:3,4 29:5,9 32:7 37:20 37:25 40:15 49:7 49:8,14 52:19,20 54:10,18 56:12,17 61:8,16 64:11,19 66:11,16 70:8 71:1 72:15 75:25 76:25 82:22 87:15 87:21 88:20 89:3 90:24 91:4 97:7 97:10,15 98:6 104:15 105:18,24 106:9 108:3 109:5 109:19 112:19 119:3,5 123:4 125:14 127:13,17 127:22 129:13,24 131:17 137:12,17 141:18 144:4 148:23 155:11 168:12,14 169:7 171:13 198:7,7,10 exists 50:14 exits 47:12 135:5 193:2 expect 156:7 189:15</p>
---	--	---	---

[expected - find]

Page 14

expected 45:3	extensive 7:23 8:7	130:5 139:7	fibers 65:25 83:25
experience 13:16	9:25 10:16 169:24	141:21 176:19,22	84:3 86:12 90:19
34:1 36:2 63:17	179:1 182:11,23	familiarity 13:18	90:19,21 99:14,20
80:7 81:15 150:22	extent 163:9	63:18	100:1 107:1,4
150:23	extra 121:9 138:3	far 26:22 53:17	176:5,25 177:7,7
experienced	extremely 108:22	57:11 183:19,20	177:12,12,16,16
150:18	f	190:6	182:3
experiment 36:8	f 2:21 136:1 200:3	fast 41:21	fibrils 99:10
39:6,15 102:16	200:13	fda 7:15,19 8:3,4,6	fibrous 26:7,13
155:17 156:18	facility 9:10 53:8	8:12,23 9:4,8,15	35:5,24 37:2 65:7
158:7 167:4,5	69:6	9:17,21,25 10:7,13	65:19,21 66:1
experimental	fact 10:6 16:11	10:15,18,23 11:4	69:22,25 70:2,4
155:24	17:11 27:25 36:7	12:1,14,21 13:2,25	92:18,21 100:14
experiments 33:12	36:22 42:6 55:25	14:13 16:4,5,10	103:15 120:15
36:21 102:17,20	57:4 66:21 70:21	17:1 20:11,25	121:5 155:15,23
102:21,22,25	79:18 101:10	21:23 30:14,16,19	156:1,5 180:5
103:3,3,15 157:21	103:2 120:11	30:24 49:4 52:6	183:9,12,12,15,16
166:22,23,25	130:2 151:14	53:2 168:19 169:4	field 53:20
expert 18:19 19:1	153:12 157:4	171:16,23,24	figure 31:17 58:2
26:4 79:14 80:5	190:1 197:15	173:2 174:12,13	151:22
80:12 133:14	faction 123:13,24	182:9,11 183:19	figures 122:4,21
expertise 164:13	factor 124:10	184:8 185:23,24	figuring 197:12
experts 21:18	195:13	187:20 190:2,15	file 155:19 171:7
27:14	factors 100:3	193:25 196:14,18	filed 173:7 182:16
explain 13:1 32:10	fail 51:3,16	197:25 198:18	files 10:4 190:20
149:23	failed 51:10	fda's 7:15 8:10,16	fills 196:18
explained 110:5	107:12	11:22 14:8,21	final 20:11 42:13
143:5 199:19	failing 51:17	20:11,25 21:2,8	44:20,22 46:17,21
exploiting 104:20	fair 27:11 63:13	196:1	78:21 84:15
104:23 105:15	63:19 83:7,9	feed 166:5,19,25	102:24
exploration 106:1	125:11 140:24	167:11,14	finally 111:17
exploring 31:16	151:18 164:23	feminine 83:22	find 12:1 18:20
exposed 45:17	168:24 172:19	ferry 146:20,21	22:19,23 24:16,18
176:2,3	fairly 162:14	147:2,7	25:12 27:3,4,9,16
exposure 11:7,9	fall 107:7	fiber 16:17 26:18	30:3 36:17 50:12
11:10 12:22,23,25	false 153:5	83:11 84:6 93:21	65:24 66:1,1,3,5
13:1,9,18,23,25	familiar 32:1	99:8 106:19,24,24	69:19 70:19 74:12
14:8 16:7,23 17:4	39:19 59:19,23	106:25 107:16	74:14 78:22 83:25
19:15 20:12 43:12	90:5 107:17	174:10,18 178:12	85:10,11 87:25
43:22 45:16 46:11	108:10 113:9	182:5	88:1 93:10 97:17
140:1 178:8,13	115:5 126:17		99:8,18 101:20

[find - generally]

Page 15

106:19 118:10 126:8 160:15 161:15 162:18 167:23 178:20 184:22 finding 30:5 57:11 65:3 69:8 70:20 71:21 74:7 78:25 83:11 86:11 88:14 97:24 105:5 107:9 126:3 161:5 findings 43:2,10 43:11 46:9 121:3 140:18 160:5 fine 42:16 79:12 81:22 95:1 132:6 138:4 156:7 176:23 finely 16:15 fines 81:8,13,14,16 81:17,19,20,20 123:12,25 124:3,9 finish 40:22 58:8 128:4 154:16 166:12 180:9 finished 27:17 34:16,18,20 35:2 35:20,21 36:3 88:12 105:1,12 106:5 107:11 111:14,22 finishing 146:15 finite 31:9 first 17:8 32:10 37:24 40:4,7 41:1 41:9 52:15,17 55:17 57:24 69:3 69:3,7 73:16 79:15 80:23,23 99:9 100:19 108:2 117:17 123:1	133:1 141:5 143:12 165:16 168:4 178:19,21 195:7 198:14 five 51:21 52:6,7 92:6 96:4 162:21 177:17 flagged 184:18 flamm 14:14 184:5,9 187:1 flipside 61:24 float 166:5,19,25 167:11,14 floated 121:17 floating 33:1 floor 3:6 96:6 flotation 31:23 81:16 follow 52:11,15,22 53:16 54:9 76:19 77:1,13 90:22 98:24 180:11 follows 141:24 fontana 61:2 81:2 81:5 127:8 129:25 130:2,10,22 131:3 131:8 133:23 134:4 136:13 fontane 132:10,20 133:5,19 food 7:24,25 9:12 17:2 21:10 foods 62:24 footnote 184:16,25 187:15 foregoing 200:5 forgot 67:22 form 28:7 35:5,24 37:2 50:6,15,15 69:11 74:11 78:17 87:2 90:3,4 92:21	93:21 152:4 159:12 180:5 183:12,16,17 196:18 format 200:7 forms 78:18 183:9 forth 7:19 136:13 forwarded 197:18 found 18:6,14 23:23 27:7 35:20 35:21 36:3 46:10 46:14 51:8,17,18 51:19,21 56:1,8 57:4 65:2,14,15,18 65:24 67:10,11,12 69:22 70:13 71:14 71:20 74:6,10 83:20 88:12 92:10 93:11 97:6 99:4 101:14 103:16 106:22,23,25 107:1 110:7 120:15 132:1 141:6,6 143:7 161:19 163:13 167:15,18 169:8,9 175:5,6,21 179:25 180:3 181:19 182:3 184:23 188:25 foundation 13:6 13:12 24:8 33:22 37:17 58:17 103:7 104:2 113:3,6 115:19 117:21 118:12 174:20 176:14 185:9 187:11 188:11 191:19 four 51:21 52:5 78:25 86:10 93:25	161:12,22 162:21 170:4,7 177:5,11 186:17,21,22 188:21,25 189:11 189:23 194:16 195:20 fragrance 153:21 153:22 155:9 frame 177:17 france 57:25 137:2 free 16:12 84:13 frequency 161:9,9 161:11 frequent 162:14 front 163:4 170:5 192:9 froth 31:23 fruit 178:2 full 62:22 151:12 151:13 187:4 200:6 function 31:1 fund 46:24 62:19 funded 40:8,9 funding 46:25 further 10:22 21:8 21:10 117:5 178:17 g g 126:15,17,18 171:6 gamma 113:12 gaps 161:21 gary 14:13 184:5,9 gears 20:24 21:12 57:14 general 16:11 103:24 163:11 generally 62:6 81:20 108:25 166:6
---	--	---	--

[geographically - hear]

Page 16

geographically 136:22	104:21 108:6 109:3,18 111:18	good 6:3,15,23,24 7:1,11,12 30:20	guys 119:7 153:12
geological 130:16 132:24 133:18	113:6 116:3 117:9 121:11 126:7	62:21,23 111:21 120:2 134:18	h
geologist 26:5 133:15 134:14 154:15	127:14 128:9 129:9 133:7 137:2 137:5 140:5,21	136:7,10,11 141:14 143:19 158:11 177:9 178:4	h 5:2 7:9,9 145:8
geology 64:9 130:5 131:15,18 133:2 134:11 150:18	141:8 144:5,5 154:16 164:17 167:12 170:17	gordon 176:19 gotshal 3:15	habits 43:18
george 1:15 3:12 165:2,9	173:9,13 175:19 184:15,21,22 194:17,24	government 66:7 66:22	half 30:23 121:4
germanasca 132:16 133:8	goes 11:4,25 12:1 14:18 26:20 28:10	governmental 197:25	hammondsville 31:8 37:1 64:9
getting 53:17 127:8 189:17	28:16 39:7 43:20 43:25 45:9,21,24	grab 170:14,20	hand 51:2,14
gianfranco 142:23	53:21 124:10 129:1 169:12	grade 165:24,25 166:2,2,3	handed 92:4 119:7 130:7 133:1 138:12 160:11
gianna 132:15 133:5,25	129:1 169:12 176:10 185:23	graded 166:17	handwriting 172:11
give 38:16 59:16 70:6 71:7 73:20 82:20 87:10 91:9 94:3 150:1 161:17 168:8 198:11	going 7:20 19:3,18 28:9 32:23 38:6 39:12 42:9,24 45:25 47:4 50:21 58:13,24 60:22	grades 122:14,17	handwritten 172:10
given 29:22 48:8 62:6,8 93:22 111:19 138:1	62:21 64:10 72:8 77:5 82:2 93:1 95:14 96:23 100:16 101:15 105:20,24 106:10	gradually 16:13	happen 13:20,22 117:3 138:11
gives 38:16 173:2 186:6,8	106:17 108:12 114:21 115:10,25 119:15 125:10 133:11 144:9 147:8,9 150:12 156:7 162:18,20 166:15,23 174:1 175:11 178:2 179:14 180:8,17 190:16 195:17 197:25	grafite 99:7 129:20	happened 7:18,21 92:14
glance 99:9		grafiti 141:13	happens 175:12
go 7:15 10:22 17:6 17:7 19:23 32:4 39:18,23 42:1,18 42:18,24 50:16 52:2 63:10,23 64:25 68:16 75:18 75:22 76:16 80:13 82:18 84:4 87:13 92:11 93:14,25 97:5,19 98:20 100:3,17 102:9		grammatically 152:24	happy 46:8 94:15 109:9
		granted 185:14	hard 108:21 141:24 142:8,15
		grantham 125:15	harvard's 66:18
		great 43:9 119:9 174:14	hazard 12:3,4 14:3 14:6
		greater 11:23 19:13 178:1,9	hazardous 185:2 185:18 187:17
		greenstone 3:8	hc 111:1,5
		grieger 100:7	he'll 199:6
		ground 16:15 36:25 131:10 154:9 175:14	head 100:20
		group 115:23	heading 140:15 186:3
		guess 60:22 105:17	heads 173:3 186:6 186:9
		guy 124:10	health 12:3 14:3,6 14:12 66:18
			hear 21:7 101:6 115:14 116:6 151:2 192:10

[hear - industrial]

Page 17

194:8 heard 7:17 8:15 12:25 18:2 26:2 31:22 39:25 40:7 47:9,25 78:19 114:1,5 135:2 198:3 heavy 28:18,23 29:23 30:2 help 54:3 170:7,20 helping 151:17 helps 163:19 hi 6:23 hide 101:1,7,10 high 131:18 higher 177:5,11 190:6 highly 24:18 hildick 76:3 historically 60:16 138:21 history 62:25 194:24 hold 54:17 95:8,25 98:18 113:1 159:10 160:14 164:14,16 166:8 166:11 179:19 192:17 193:8 195:19 198:6 hole 131:10 134:6 134:9 holes 130:4 hollow 99:12 hon 2:12 honor 6:15,23 7:8 18:21 19:2 21:3 23:3,8 24:3 29:7 33:14 37:16 40:19 40:25 42:11 45:25 47:20 49:11 54:19	55:10 57:6,19 58:5,12,21 65:10 67:2,14 70:1 75:2 76:9 77:10 79:6 79:10 82:2,9 86:7 86:14,18 88:7 91:16 93:5 94:5 94:12 96:20 98:15 101:2 103:8 109:9 110:18,21 113:4 114:15,18 115:2 115:11 119:15,17 119:20 128:5,12 128:13 129:4 132:4,7 134:18 136:7 138:5 144:5 144:9 147:25 148:11 149:2 152:11 159:23 160:15,23 163:25 164:15 168:7 170:10,18 179:15 179:18 181:2 192:15 194:10 195:18,25 197:3 198:2,6,7 199:11 hopefully 116:5 119:10 hopkins 4:5 7:5,11 7:13,17 8:15 9:1 13:16 18:12 19:9 19:21 22:2 24:7 24:12 27:19 29:3 29:12 33:25 34:24 35:13 37:22 41:1 46:7,19 47:23 49:10 50:4 55:20 60:13 67:23 71:1 81:14 84:16 86:22 88:11 93:1 103:8 120:20 136:10	138:7 146:7 149:3 161:17 168:8,11 170:3 190:15 193:3 198:25 199:1 hours 42:17 hulfish 3:15 hum 129:7 137:1 173:12 175:24 human 14:13 15:1 17:9 humans 16:16 hundred 13:23 15:13,17,23,25 16:2 20:21 26:21 134:11 188:16 189:6,19 195:15 hundredth 99:11 hutchinson 85:4 hypothesis 43:11 hypothetical 176:6,8,25 177:3 178:11 189:21	132:13 importer 146:21 improper 192:14 impurities 10:11 141:23 172:6 impurity 92:17 inaccurate 28:19 28:25 inadvertently 107:7 incidence 45:22 include 147:20 148:4 included 148:7 includes 181:21 including 10:17 11:2 21:23 31:13 47:8 63:18 66:7 66:19 135:2 175:9 incorporated 6:22 incorporates 53:23 incorrect 153:9 increase 43:15 44:6 independent 26:4 69:5 101:19 164:13 index 4:1 indicate 190:13 indicated 102:3 indicates 35:2 61:2 197:9 indication 74:3 individual 42:9 197:17 individuals 198:15 industrial 113:13 113:15 125:1,2 156:13,14,17,20 156:22 157:19
		i	
		idea 33:3 152:14 identification 26:9 57:17 70:7 97:9 identified 30:7 100:2 identifies 88:23 identifying 21:25 29:19 ignore 191:3 implementing 54:4 implicated 81:8 123:13,24 124:11 implied 17:10 imply 51:11 important 22:8 123:6,11 127:4	

[industrial - johnson]

Page 18

158:2,5,6,8,10,15 158:20,23 159:1,7 159:18,21 161:24 162:2 165:20,24 166:2 industry 32:21 48:22 infant 14:10 infants 15:6 176:2 infinitesimally 20:17 information 10:10 10:14 14:25 37:11 174:18,24 175:1 194:18 informed 154:23 171:24 ingredient 153:21 ingredients 153:20 153:22 initial 49:18,21 injecting 94:23 103:18 115:8 innumerable 147:22 instance 199:12 instances 162:13 162:21 institute 66:17 108:23 institution 101:13 institutions 101:20 instruct 101:9 instruction 180:11 instructions 47:7 53:24,25 96:3 134:23,25 insulation 174:3 175:9,16,17 insurance 197:10	intended 42:1 intention 31:6 interest 179:10,16 interface 151:1 interior 183:15 internal 76:2 196:14 197:13 199:15 internally 194:13 197:23 interpret 24:7 58:15 interpreted 79:16 interpreting 58:11 interrogatory 148:24 interrupt 59:5 178:24 interruption 122:18 introduction 132:1 investigate 9:13 9:18 investigated 11:1 23:25 investigation 9:16 14:20 21:8 43:19 60:1 investigations 8:8 investigators 14:23 involved 34:13 49:4,6 53:2,18 54:2 95:12 157:22 involvement 7:16 7:23 46:20 iron 92:25 issue 7:16,18 8:1 21:1 24:13 36:2 61:5 64:4 71:13	74:5 76:7 90:14 91:7,22 107:2,18 111:2,6,20 114:25 128:20 198:22 issues 22:2 44:11 57:1 109:24 128:19 144:1 it'll 154:18,19 170:6 italian 22:20 40:4 43:3 46:10 60:12 60:24 64:1 80:24 81:1 88:1 92:6 93:12 99:6 108:17 110:1,4,5,7,13 112:11 120:16 121:8,21,24 122:13,14,24,24 125:15 126:25 129:19 131:18 140:9,13 141:14 142:10 143:5,14 143:18 146:21 147:8,19,23 italians 144:3 145:17,18 146:10 italy 26:22 27:4,8 60:14,21 121:25 122:8,12 146:14 italy's 132:10 133:23	60:24 61:2 63:11 75:15 80:2 81:1,4 83:5,21 98:24 100:20,21,24 101:19 107:11 116:25 119:16,22 120:1,4 165:22 186:8 187:10 193:18 195:10 196:18 197:19,19 197:20 j&j's 8:11 10:24 25:12 66:8,19 81:3 88:12 105:6 j.s.c. 2:12 j4-1 48:12,13 49:19 172:21 jack 3:14 6:25 85:22 88:15 jack's 88:15 january 38:20,25 119:2 170:2,11 171:4,16 jersey 1:1 2:3,22 3:3,16 200:5 jjci 157:17 jm 140:17 jm's 140:18 john 4:5 7:5 171:19,22 172:4 185:7,7 johns 97:6 98:25 99:19,23,25 100:15 137:11,23 138:17,25 139:7 johnson 3:17,17 3:18,18 6:8,8,9,9 6:10,10,11,11,21 6:22,22,22 7:4 8:19,19,19,20 10:12,12,17,17
		j	
		j 3:7 7:9 j&j 6:25 7:19 10:19 21:15,16,23 22:13 25:5,5 27:12 29:12,14 31:16,23 36:12,22 40:8,9,12 46:20,23 48:17,19 49:1 52:16 59:21 60:24	

[johnson - lawsuits]

Page 19

21:7,7 26:24 27:3 27:17 30:4 46:25 46:25 60:6,6,8,8 60:10,10 68:20 78:22 94:22,22 102:1 105:11 106:14,15 111:9 112:8,23,23 113:10,10,16 120:6,6,14,14 121:22,22 122:25 122:25 130:19,20 130:21 131:6,7 132:19,20 139:21 139:21,25 140:1 140:12,12,16,16 140:21,21 141:3 142:22,22 143:13 143:13 145:4,4,7,9 145:10 149:12,12 149:15,16 150:1,1 150:5,5,8,20,20 153:19,20 154:21 154:21 156:6,24 156:24 157:9,9,13 157:13,16,16 158:13,13 161:1,2 163:16,16 165:1,2 165:8,8,17,17,25 166:1 171:3,3,16 171:17 173:2,2 177:2,2 186:6,6 190:1,1,5,6,7,7,13 190:16,16,18,18 191:12,12 194:13 194:13 195:14,14 johnson's 7:5 8:13 11:2 26:24 27:17 30:4 68:20 78:22 79:1 97:21 99:5 102:1 105:12	111:9 112:9,11 113:17 130:21 141:3 150:8 156:6 165:17,18 189:1 190:13,20 191:14 195:9 judge 192:8 judicial 200:7 july 12:9 110:19 129:16 160:3 168:23,24 185:6 jump 24:15 june 25:8 77:24 184:5 juror 134:23 jurors 8:9,21 9:7 12:25 17:17 18:2 21:15 22:10 26:2 27:11 30:1 31:2 31:22 32:5,9,11,23 37:7 40:7 46:6 47:25 63:25 65:1 67:23 68:10,16,18 78:19 83:19 84:9 85:5 87:17 90:8 92:5 98:24 99:3 102:14 106:21 108:12 198:11 jury 2:12 6:2 7:2 7:17 39:24 47:4 47:12,16 65:13 73:1 93:7 94:18 96:12,18 114:12 114:16 115:12,12 116:6 134:21 135:5 136:2,3 143:20 148:1 192:1,10,20,23,24 193:2 195:13 jury's 6:1 8:15 47:15 96:11 114:1	114:5 191:2 k k 7:9 keep 48:3 98:12 114:24 key 155:18 kind 38:16 39:2 54:3 158:16 kindly 147:8 kinds 22:3 73:2 78:15 knew 125:10 139:1 194:1 know 14:19 30:14 33:19 56:3,10 60:5,13,20 62:18 83:3,6 87:13 88:11 89:4 96:5 99:24 103:11 111:4 115:13 120:8 122:2 125:19 129:22,25 130:2 133:14 137:12 138:24 139:2,4,8,10 145:1 145:20 146:3 147:8,22 148:23 149:11,15,20,21 150:3,4 152:8,19 152:19 153:4 159:1 161:8 164:23 165:24 166:15,24 167:15 168:16,19 169:8 172:11,18,20 178:20 183:20 187:24 188:2,21 189:23,24 190:5 191:5,8,12 195:15 198:19	knowledge 200:9 known 182:7 knows 80:3,3 190:6 kohler 171:6 konigsberg 2:18 3:5 l l 1:9,15,20 lab 53:14 54:2 83:24 84:6 label 12:6 155:1 labeled 10:9 labeling 185:1,17 187:16 labor 128:19 laboratories 48:5 48:8,25 49:5,22 laboratory 8:8 121:2 labs 51:21 52:7,14 53:10 54:3 85:10 85:11 lack 33:22 103:7 lacks 174:20 176:14 185:9 187:11 188:11 191:19 langer 33:13,21 34:6 78:20 84:15 language 196:5 large 26:7,12 81:17 late 7:22,25 31:5 law 1:1 197:19,19 lawsuit 153:2 189:11 193:19 lawsuits 190:23 192:3,19 193:23 194:2 196:4,10 197:6 198:2
---	--	--	---

lawyer 147:11 189:2 190:9,22	lifetime 11:11 15:3 17:9	longo 18:19	looking 14:1 33:8
lawyers 37:7 56:21,25 151:16	light 48:16,23 49:20 50:17 52:3	longo's 18:2	34:16 38:15 56:12
lay 11:13,14 13:12 113:3,6	65:5 73:5	look 10:5 12:19,24 13:23 14:7 17:6	69:2,21 72:11
ldno 145:21 146:4	limit 181:20	21:18 25:14 27:19	81:7,9 85:15 87:8
lead 57:7 59:8 121:21	limitation 23:23	30:18 31:6,10,19	90:13 98:5 116:23
leading 18:8,15 46:1,2 57:6 58:23	linda 14:18,20,24 16:22 17:10,24	31:20 32:25 36:11	124:8 139:3
59:4,5,6 65:10	19:9 20:1,1	36:18 37:20 43:6	158:18,25 161:5
75:2,3 95:16	169:10 175:23	43:25 44:13,20	167:19,22 174:3
132:10 133:23	184:3,18 188:6	49:7,17 50:16,20	looks 9:22 14:13
leaflet 108:7	194:22 197:17	52:2,19 53:22	28:4 33:2 34:11
leave 47:6 96:2,6 134:22	line 107:2,5 183:19 195:11	54:10,14 56:14	34:14,15 36:6
lee 115:23	liquid 22:5 28:18 28:23 29:23 30:2	65:4 67:10 69:15	40:13 42:25 51:20
left 7:3,13 51:14 117:15 132:15	33:3	69:24 70:22 71:4	52:5,20 56:20
133:8	list 140:9	72:14 73:12 75:14	97:20 143:1
legal 191:6,7	listen 174:16	75:23,24 76:25	144:24 154:13,18
length 40:20 99:10 149:4 172:21	literature 10:3 34:6	78:4,9 79:21	162:12 168:23
letter 25:8 56:20 57:25 80:24	litigation 149:18 150:2 196:3 197:6	83:10 85:24,25	lost 34:22 170:12
letterhead 156:19	little 8:16 32:2 47:24 51:14	87:12,16 88:19,21	lot 60:22 62:5,5,8
level 132:12 178:8 178:13 180:5,19	108:15 117:14	89:18 90:22 92:18	62:9,10,14,25 63:4
181:23	142:4 162:13	97:19 104:24	63:11,12 78:19
levels 11:9 18:14 18:18 22:1 29:20	168:10 178:16	110:14 112:22	99:5 114:1 122:3
92:9 109:1 175:12	liver 43:16	113:20 118:25	137:7 161:2,3
levy 2:18 3:5	living 188:19	120:9,9 121:2	162:5 163:17,19
lewin 34:6	livingston 2:22	123:4 127:3	165:21 166:22
lewis 33:13,21	llp 3:15	139:25 151:2	lots 61:5 174:15
liability 197:12	located 65:18	153:19 154:19	low 22:1 45:21
license 200:3	locations 65:16	156:19 157:23	108:22 155:18
lie 132:15 133:7	long 117:10 119:22 122:13,14	159:3 163:4	lunch 100:17
life 31:9 168:10	147:20 148:4	167:17 168:22	134:19,21 135:3
	156:25 172:22	175:12,19 176:24	luncheon 135:8
	longer 8:2	178:18 183:4,6	lung 15:1 43:12
		184:15,21 199:2	lungs 45:20
		looked 17:8 27:3,7 54:12 68:12 74:19	luzenac 57:25
		74:22 90:18 94:2	m
		107:18 120:6,14	magnesium 90:17
		123:5 130:23	92:17,23,24,25
		139:25 175:15,16	magnitude 15:4
		175:17	17:10
			mail 2:23 197:18
			maimon 2:18 3:4
			6:15,17 199:10

malignant 44:10 44:19 manges 3:15 manufactured 75:9 124:25 manufacturers 7:24 10:16 manuscript 42:1 manville 97:6 98:25 99:19,23,25 100:15 137:11,23 138:17,25 139:7 map 136:18 maple 3:3 march 38:15 49:17 111:25 162:11,11 mark 32:14 marked 5:3 24:21 57:16 148:9,12 169:6 173:14 market 11:2,15 169:25 174:25 marking 87:20 97:8 109:14 127:15 128:7 148:22 massive 50:2 180:4 material 33:2 50:10 materials 21:25 24:19 33:4 36:16 66:25 105:9 107:8 163:6 math 15:9 17:21 19:2 mathematical 12:23 14:4 17:19 mathematically 177:10	matter 6:7 maximum 147:4 147:17 mccrone 53:17,23 82:18 83:20 85:7 98:25 99:3,18 100:7 104:15 106:14,18,22 110:14 112:16 mccrone's 54:2 84:10 mcneill 1:15 3:12 6:10,19 199:12 md 76:3 mean 35:7 36:1 50:4 51:7 59:7 65:21 66:3 76:7 78:2 79:18 86:17 139:2 145:13,14 145:17 146:5,10 174:13 179:18 196:9 means 13:19 31:1 33:9 50:25 51:8 51:10 66:5 110:6 110:8 143:6 144:4 145:19,24 146:4 146:12 meant 150:13 152:6,8,14,19 measurable 17:24 19:24 measure 175:11 measured 90:16 176:17 measurements 175:3 176:11 measuring 48:12 medical 76:3 194:24	medically 195:3 medicated 82:19 83:5,21 125:15,20 125:21 126:4 medicinal 9:13 meet 36:4 140:22 141:4 meeting 52:25 141:11 142:21 146:13,18 meets 31:21 member 53:20 members 7:2 47:4 134:21 memo 17:10 142:25 146:11,15 171:6 185:23,24 185:24 186:13,14 187:6,8,12,20,24 188:1 memorandum 76:2 81:11 mention 60:8 66:22 70:18,22 71:15 73:24 82:6 86:4 89:6,24,25 112:10,13 mentioned 56:6 mentions 89:11 mesothelioma 15:2 173:19 188:10,22,25 189:16,24 191:14 191:16 193:24 194:15,23,25 199:14 mesotheliomas 190:19 191:17 met 140:17,17 142:22	method 7:14 21:13 21:16,19,24 22:3,6 23:21 25:7,11 28:2,3,5,24 29:14 29:15 30:15,17,20 31:24 48:4,6,9,9 48:11,14,22,25 49:20,24 50:7,11 50:17 51:3 53:3,6 53:7,11 54:4,8 93:3 99:23,25 172:13,16,17 180:16,21 181:8 181:15,18 methodology 52:12 methods 92:9 172:23 micrometer 99:10 microprobe 100:13 microscope 30:12 78:4 90:18 microscopists 53:24 microscopy 48:20 50:17 52:3 65:4,5 73:6 104:22 139:11 161:14,16 162:4 180:2,19 181:12 mid 1:2,9,15,20 middle 133:11 middlesex 1:1 2:2 200:15 miles 122:11 131:14 134:10 millers 43:14 45:10 milling 175:13
---	--	---	--

[million - negative]

Page 22

million 15:13,17 15:24,25 16:2 20:21,21 29:21 139:17 140:2,13 140:14 145:14,19 188:9,16,19 189:6 189:10,19 195:15 millionth 15:11,15 15:21 millionths 18:3 mind 152:9,10 mine 31:8,19 37:1 43:3 60:9,25 61:2 64:6,9,23,24 65:2 66:19,24 80:25 81:2,3,4,5,6 105:10 108:14 126:25 127:8 130:3,22,23 131:8 132:10,10,20 133:4,5,10,12,19 133:22,23 134:2,4 134:4,5,9,10 142:6 142:7,13 158:10 158:12,20,23 mined 64:7,8 139:5 154:8 miner 136:21 mineral 65:18,25 92:17 153:14,15 183:16,18 mineralized 130:14 131:13,13 mineralogical 72:6 73:21 140:8 mineralogist 154:15 mineralogy 150:19 minerals 29:20 31:1,17,25 35:5,23	65:15 71:22,25 78:18 84:1 155:2 157:22 165:20 183:9 miners 43:14 45:10 mines 16:12,13 29:13,16 30:3 31:12,17 40:5 60:12,12,14,18 64:2,4 66:7,19 77:14,20 78:7 121:25 122:1,6,12 122:19 130:10 131:1,5 134:4 155:13 156:15 158:19 165:17,18 165:21,22 166:1 mining 32:3 45:16 45:16 60:17 124:25 136:20 139:8 175:13 minnesota 85:5 minus 20:23 188:15 minute 63:24 86:2 95:25 96:5 177:17 192:24 minutes 16:8 47:5 52:23 mischaracterizes 117:22 misleading 191:23 194:1 misrepresented 118:10 missed 151:15,17 mistaken 99:9 mistakenly 24:16 24:18	misunderstanding 182:25 mix 91:12 mixed 114:14 115:4 moment 160:19 161:17 180:9 192:21 193:8,10 money 174:14 monitoring 161:8 161:11 169:24 montana 31:13 monthly 162:3,6 months 38:18 55:2 55:18,23 186:5,12 186:17,21,22,23 187:1,9 morning 6:3,16,23 6:24 7:1,11,12 41:21 47:5 158:18 178:25 179:4 182:22 morphology 86:13 180:2 mortality 43:19 45:11 moshe 2:18 3:4 6:17 163:19 170:1 170:16 motion 115:14 mount 2:22 78:20 mountain 60:18 move 19:7 24:21 25:15 29:5 47:2 49:9 56:13 63:21 64:11 67:14,19 90:24 94:8,10,15 95:4,14,21 98:8 104:4,6,12 109:5 110:23 115:20,25 116:19 120:2	164:17 moved 24:25 25:21 29:9 49:14 56:17 64:19 91:4 97:15 103:22 109:19 129:13 171:13 moving 80:16 109:15 mtal 121:9 musco 148:25 149:11 150:18 151:16 musco's 150:24 n n 5:1 7:9,9 136:1,1 136:1 name 110:2 157:16 183:12 named 198:15 names 113:9 national 66:17 naturally 121:16 nature 182:5 near 122:8 necessarily 79:18 neck 120:24 need 12:5 51:12 58:2,16 72:17 81:13 124:6 127:20 132:23 133:14 149:23 159:6 172:22,25 174:5 176:21 193:13 needed 143:10 needle 78:4 needles 75:23 76:4 76:17 77:2,21,23 negative 26:22 198:19
---	--	--	---

neoplasm 44:4 neoplasms 44:2 never 58:3 74:24 101:16,22 152:3 156:22 158:13 159:9 161:2,25 163:16 195:6 new 1:1 2:3,3,22 3:3,6,6,16 104:19 104:22 172:1 200:5 nine 18:4 niosh 66:17,22 67:11 nocks 2:21 200:3 200:13 nolan 3:14 6:25 7:1 15:18 77:9 137:16,20 138:5,8 138:9 160:21 168:7 non 11:10 43:13 44:10 50:6,10,15 50:18 51:13 76:4 76:17 77:2,20,23 78:18 87:1 90:3 147:24 156:5 159:22 163:24 180:5 181:3 183:9 183:12,15,15 200:8 normal 11:17 normally 107:5 north 1:7,13,18,24 121:18 northern 122:8 note 61:23 62:10 172:10 notebooks 47:6 96:2 134:22	noted 77:23 183:8 notion 68:19 111:9 november 10:8 168:20 number 26:7,12 38:2 42:25 43:5,6 59:16 61:10 62:5 70:16 71:7 73:14 77:15 82:20 87:10 87:14 91:9,11 92:2 121:8 122:24 122:24 124:9 127:17 137:12,17 161:6 169:7 197:16 198:25 200:3 numbers 177:22 177:23 199:2 nurse 150:25	114:15 115:3 117:21 118:12 122:18 124:18 129:8 140:25 143:15 144:17 147:11,12,24 148:1,11 149:2,7 152:11,16 153:6 155:5 159:8,12 163:24 171:10 174:20,21 176:14 185:9 187:11 188:11 189:2,3 190:9,11,22 191:1 191:2,19,20 199:6 objectionable 128:18,18 objections 119:23 190:25 191:25 objectives 53:12 observed 45:1,22 46:12 65:8,20,22 100:8 observing 90:20 93:4 obtain 116:15 obtained 43:22 143:9 obvious 124:17 obviously 195:11 occasion 16:17 occasionally 10:19 126:12 occupational 11:10 66:18 occurrence 44:2 occurring 121:16 october 62:7 162:11,11 offending 16:13	offer 97:12 128:11 171:9 196:17 198:6 office 14:14 officer 6:1 47:15 96:11 136:2 offices 168:23 official 17:1 officials 12:15 oh 51:4 84:22 101:20 150:3 161:19 179:14 188:5 okay 7:22 8:25 9:10 23:11 41:15 42:24 57:10 58:7 58:16 59:9 64:15 68:11 71:12 72:10 83:1,2 87:7 95:7 95:14 96:7 108:8 111:17,21 112:18 117:10 123:3 125:11 126:1 128:1 131:6,25 132:3 133:4 136:24 138:14 139:4 140:5,11 143:4 151:16 157:24 160:16 161:20 162:10 163:8 166:5 167:9 167:12 168:15,18 170:8,9,23 172:10 173:1 174:2,7 177:14,24 178:5 178:24 182:19 183:7,23 185:17 185:22 188:5,17 197:7 198:23 old 89:14 156:4,5
	o o 7:9,9 136:1,1,1 oath 149:12 150:6 150:21 object 46:1 55:11 58:10 59:4 82:3 119:16 144:10 159:23 164:15 181:2 193:7,17 objected 67:11 objection 18:9 19:6 21:3 24:23 25:17,19 29:6 33:16 35:8 40:19 49:12 54:21 55:12 56:13,15 61:13 64:13 66:13 68:5 76:9 86:19 91:1 94:5,20,22 97:13 98:14 101:2,4 104:11 108:5 109:10,17 112:24		

[om - paragraph]

Page 24

om 180:2 181:9,10 omitted 151:19,21 151:23 once 161:2 163:16 168:16 ones 118:25 122:3 opening 68:1 operation 32:3 124:25 138:19 opinion 94:23 103:19 115:8 187:25 opponent 199:16 opportunity 31:14 opposed 151:9 197:10 opposite 74:9 151:9 185:13 optical 78:1 180:1 181:12 option 159:2 optional 86:7 order 176:4 ordered 2:17 orders 15:4 17:9 192:13 ore 36:25 60:9 65:19,22,23 66:4 73:22 80:19 104:18,20,22,22 104:25 105:4,6,7,8 105:13,21 106:1,4 106:6 110:17 111:24 163:3 ores 65:17 106:3 organization 90:11,15 original 77:11 originally 110:1 osha 53:20	outline 102:21 output 132:11 outside 18:22 21:18 29:13 93:5 overall 45:11 157:1 overruled 117:23 143:16 144:17 147:12 149:7 152:18 153:7 155:6 164:17 174:21 176:15 180:12 185:10 188:12 189:3 190:11 191:2,20 overview 38:16 owned 165:20,22 165:25 owner 108:14 142:3,6,7,23	97:20,20 109:3,22 111:17 112:23 113:21 126:8 128:25 130:6 131:23 140:6,11 169:6,13 172:25 173:13,15 175:19 178:18 183:23 184:22,22 197:20 pages 2:6 12:18 98:12 169:13 194:23,23 pamphlet 142:4 panatier 3:7,8 4:7 6:17 18:8,15,21 21:3 23:2,8 24:2,8 24:23 25:17 29:6 33:14,22 35:8 37:16 38:3 40:19 41:5,13,16,20,24 42:6,16 45:25 49:12 54:21 55:10 56:14 57:6,19,21 57:23 58:10,21,24 61:13,17 62:15 63:14,20 64:13 65:10 66:13 67:2 67:10 68:7 70:1 75:2 76:9 79:6,10 80:4 82:2,9 86:7 86:10,18 88:7 89:2,4 91:1 93:5 94:5,20 95:16 96:20 97:11 98:11 98:14 101:2 103:7 103:14 108:5 109:10 110:18,22 111:11 112:24 114:15,18 115:6 115:15,18 116:12 116:17 117:4,8,10	117:12 118:14 119:5,7,8,17,25 120:3 123:9,10 124:20 127:16,21 128:1,4,8,11,20,23 129:7,15 132:7,8 134:18 136:6,7,9 137:15,18,22 141:2 144:12,16 144:19,20 147:24 148:3,15,16 149:10 152:13 159:14,15,22 160:2,17 163:24 164:3,19 166:13 168:13 170:14,20 170:23 171:1,9,11 171:15 173:16,17 179:13,18,22 180:13 181:2,7 185:12 187:14 192:16 194:3,10 195:22 196:7,12 196:24 198:5,9,13 198:23 199:7 paoletti 57:16,23 58:1 59:12 paoletti's 112:5,10 paper 41:23 42:13 44:20,22 46:21 61:1 66:21,22 78:22,24 84:16 112:5,10 114:5 115:7 133:18 176:19 papers 41:11,14 paragraph 35:15 100:5 132:5 142:18 178:19,21 179:10,21 180:14 183:8
	<p style="text-align: center;">p</p> p 3:14 7:9 62:5 63:4,7 137:20 160:21 p.m. 135:8,9 plsteno 2:23 packet 198:6 page 5:4 12:19,20 14:7 16:10,23 17:7 23:15 27:19 27:20,20 34:12,16 34:23 35:9 36:18 36:19 37:8,24 38:11 39:3,4,12 42:25 43:25 44:1 44:13,14 50:21 65:1 67:3 71:7,10 71:10 72:15 73:18 73:25 75:23 77:3 77:15,17 83:14 86:1 92:2 97:20		

[parallel - point]

Page 25

parallel 122:11	people 21:22	182:13,16,24	52:20 54:10,18
pardon 59:14	34:13 45:17 49:2	183:1 185:1,8,17	56:3 57:16 61:16
part 14:20,22 19:1	81:12 102:6,20,22	185:24 186:1,13	68:1 70:25 72:14
39:15 42:2 50:16	140:17 141:4	186:15,15 187:9	74:24 82:22 83:4
51:3,5,6,13 52:3,6	146:14 157:21,22	187:16 198:18	88:20 97:6,10
53:4,22 58:15	175:13 176:18	phenomenal 43:18	104:15 105:18
62:11 63:5 68:13	188:19,21,25	philippe 171:25	106:9 112:19
71:16 80:11 92:1	189:15,23 190:19	185:3,19 187:18	125:14,19 127:13
92:5 103:5 115:19	191:14,16 193:24	phone 100:11	144:4 148:23
138:19 140:7	195:8,9	phones 6:5 47:18	155:11 160:4
154:8 169:23	percent 15:15,21	96:14 136:5	171:11
183:3 193:20	15:22 17:5,12,14	photocopy 138:15	plant 32:24 34:8
196:21	17:20,22 18:2,3,4	phrase 79:21	38:6,24
participants 53:19	18:5 19:10,23	130:16	plate 78:3
participate 49:1	20:4,6,8 22:23	phraseology	plates 77:25 124:9
particle 10:10	26:17 27:2,7	120:18	124:9
26:10 81:21 124:8	28:14 37:1 121:3	physically 136:22	play 114:21
182:6	121:5 123:2	pick 7:6	played 115:10
particles 26:8,13	124:25 132:12	picture 73:10	pleasant 2:22
26:21 30:13 70:2	145:15 156:12	pictures 52:25	please 6:4,13 18:9
70:4 76:5 81:17	159:20 180:6,16	pinerolo 131:19	18:16 23:9,13
88:23 100:8,14	180:23,23 181:1	pit 134:10	46:3 47:9,17,21
121:19	181:13,17,21,25	pitch 108:15	57:7 58:23 75:3
particular 63:7,8	percentage 145:15	place 2:2 34:22	77:15 87:10 94:3
84:2 104:3	performed 182:8	placitella 3:2,2	96:2,13 105:22
particularly 32:21	period 15:7 104:3	6:18 199:18	124:19 134:22
parts 22:8 29:21	162:10 167:18	plain 156:4,5	136:4 141:1
139:17 140:2,12	177:17	plaintiff 1:16 4:3	152:18 159:10
140:14 145:13,19	periodic 167:6	61:7 75:25 87:14	169:5 172:12
party 199:16,16	permit 198:1	87:21 102:11	178:18 186:10
pastore 1:10 3:11	person 145:23,25	105:24 110:16	187:13 193:3,14
patent 32:16,16,19	146:11 150:5	plaintiff's 5:5,6,7	plm 48:14
32:20 155:19	164:6 194:17,22	5:8,9,10 49:8	plus 50:24 51:2,7
patents 32:20,21	personal 142:20	97:15 107:24	51:10,17,18,19
paterson 2:2	petition 8:16 9:8	108:1 127:22	153:21
patterns 99:16	9:10,20 10:1,8	129:13 171:13	pluses 51:22
pdf 27:20 36:19	12:16,17,20 14:8	195:20	pneumoconiosis
pear 178:1	16:5,10 21:1	plaintiffs 1:5,11	45:12,13 46:11
pears 177:21,25	167:25 168:5,20	1:22 3:10 6:14	point 58:21 60:21
pen 154:17	171:25 172:5	18:19 22:10 29:4	76:15 77:23
	173:6,10 179:2	37:7 40:15 44:14	126:19 143:23,24

[point - products]

Page 26

<p>147:18 155:19 167:21 176:10 180:18 195:5 polarized 48:16,23 49:19 50:17 52:2 65:5 73:5 pooley 22:6,13,23 23:17 25:4,5,6,25 26:3,6 27:10,11,16 27:21 28:22 63:25 64:1 65:2,13 85:8 88:2,11 100:6,11 pooley's 25:10 26:23 64:22,25 population 15:5 189:14 portsmouth 145:7 position 156:6 188:18 positive 26:9 27:1 68:4 114:8 possibility 21:18 84:5 99:25 199:13 possible 15:2 100:3 102:17 110:4 191:18 193:22 195:4,6 196:6 199:17 possibly 15:4 93:18 126:9 posterity 170:12 potential 14:6 36:8 197:12 powder 8:11 10:1 10:20,24,25 11:22 14:1 15:7 20:14 26:15,25 27:8 28:11,13,15 30:4 36:23 60:7,9 64:5 68:21,24 78:23 79:1 82:19 83:5</p>	<p>83:22 97:21 99:5 100:21 101:11,14 101:20 102:1,3 105:12 111:10 112:9 113:10,17 113:18 116:24,25 119:11 123:13,25 124:4,5,23 125:7,8 125:20,21,22 126:4,5 139:22 150:8 153:16,18 157:6,6,7 163:2 166:5,17,20 167:10 172:3 174:10 175:2 176:24 179:1 182:12 189:1 190:20 191:15 193:25 194:16 195:10 powdered 187:17 powders 8:13 10:2 11:2 26:8 172:7 power 198:20 ppm 97:25 practical 53:6 practice 62:21,23 141:3 pre 23:18 40:11,17 41:3,24 46:14,16 76:4 precise 53:25 prejudicial 194:1 198:22 preparation 68:14 107:7 130:9,25 prepared 200:6 presence 26:13 102:3 121:20 present 14:3 29:20 51:11 68:24 74:2</p>	<p>92:21 163:9 180:4 180:15 199:1 press 33:12,20 173:1 presume 138:25 139:2 presumed 110:3 pretty 11:1 69:11 124:17 150:15 prevent 57:1 prevented 136:19 previous 35:15 129:24 146:11 previously 7:9 100:9 165:25 183:9 princeton 3:16 prior 38:18 179:3 179:7 198:17 priority 2:21 probable 162:22 162:23 probably 88:17 91:11 106:24 problem 51:4 131:16 153:1 156:11 problems 174:8 procedure 27:23 105:7 procedures 28:18 proceed 61:18 66:14 144:18 194:9 proceedings 199:21 200:7 process 7:3 42:12 processing 84:8 107:8 123:12 128:23</p>	<p>produce 62:7 108:15 produced 62:9 185:2,18 187:17 product 9:13,13 10:11 27:17 29:15 34:10,16,18,20 35:6,21,24 36:3 38:22 62:22 63:2 75:15,17 80:19 81:23 82:16 88:12 100:20 101:1,7 102:24 105:2,12 106:5 107:11 111:15,22 112:23 113:12 119:16,22 120:1 126:18 130:10,21 155:8 156:22 163:23 164:12 175:2,6 190:14 191:17 195:1,10 199:14 production 62:6,8 62:12 63:4,5,7,8 133:24 162:3 163:21,23 164:4 164:22 products 11:3 28:3 34:2 35:2 83:21,24 84:11,13 106:4 113:19 120:7,9 124:23 130:25 131:7 156:20,21,23,25 157:4,7,12 158:1,2 160:7 162:15,20 163:18 164:6,11 164:20 165:3,6,10 169:24 171:3 174:15,19,25 176:12 179:23</p>
---	--	--	--

[professor - record]

Page 27

professor 22:6 profile 62:22 63:1 profiled 142:12 program 30:23 project 29:17 31:3 31:4 32:2,14,17 34:8 37:22 38:17 103:5 projects 32:15 34:3,4 promise 178:2 proper 93:2 properties 78:1 proportion 10:11 proposal 155:24 155:24 proposed 53:20 155:17 protection 155:19 protocol 30:22 96:19 proved 26:22 proven 28:17 provided 10:13 42:4 47:7 134:25 public 116:25 publication 39:21 40:12,17 41:2,3,25 46:16 147:4 publish 66:12 published 41:2,9 58:11 59:20 78:21 78:24 publishing 172:12 pull 170:1 purchase 154:23 158:19,23 purchased 158:17 165:21 pure 121:3,8 123:2 132:12	purger 156:14 purpose 29:19 53:7 104:24 197:14 purposes 75:5 95:10 97:9 127:19 129:1 197:11 put 8:2 21:1 36:13 52:4 57:18 68:2,5 68:9 102:6 105:24 107:22 108:18 115:3 128:18 138:1,2 154:23 190:16 putting 70:24 79:22 188:17	questioned 57:23 144:10,12 questioning 138:12 195:11 198:16 questions 32:6 39:20 40:14 42:19 94:24 100:18 119:18 125:18 150:21 151:1 quickly 85:13 100:16 105:21 quite 15:3 40:20 83:25 quote 72:12,20 74:18 87:25 114:7 quotes 22:19 23:10 97:25 99:21 100:1 185:15 188:3	161:17 164:1 172:8 173:21 179:10,14,16,21 180:14 183:8 185:13 reader 152:9,10 readily 26:11 reading 34:25 35:15 86:2 93:11 ready 47:10 96:4 135:3 reagent 38:24 96:19 reagents 36:14,24 37:23 real 41:20 163:20 reality 17:21 24:19 152:20,20 realize 59:7 really 122:6 149:20 191:23 rearrange 147:4 reason 62:13 148:13,22 recall 125:16 126:16 136:14 140:3 165:14 168:1 received 10:15 168:19 171:21,25 197:19 receives 187:1 recess 47:14 96:10 135:8 recipient 14:17 recognized 40:2 recognizing 31:7 recollect 55:22 189:5 record 25:18 47:13 70:6,23
	q		
	qualifications 150:24 qualified 108:23 quality 33:5,10 105:6 131:18 132:11 quantify 26:14 quantitative 173:19 quantity 26:14 quartz 81:22 question 19:17 33:6 41:18 57:21 75:6 95:16 96:22 97:3 103:24 114:17 115:2,19 116:13 117:25 130:23 131:23 149:8 157:24 159:4,11,13,16 166:10 174:16,17 174:23 178:25 180:15,20 181:4,8 181:21 191:4,5	r	
		r 136:1 raise 84:21 124:8 range 60:18 176:24 rare 28:7 183:17 rated 191:18 rationale 36:10 ray 48:14,16,23 50:12 51:5 61:20 73:9 74:1 179:24 180:25 182:4 reached 143:9 read 23:8,10,13 46:6,8 69:18 70:19 72:17 80:11 80:21 84:12 92:4 92:15 119:10 120:18 124:6 130:15 131:11 140:10 148:10	

[record - requirements]

Page 28

87:19 95:10 96:9 127:19 128:7 135:6,7 170:25 198:5 recovers 130:9 131:3 recross 4:2 red 3:3 redact 128:21 redirect 4:2 58:20 82:11 117:12 119:19 149:5 155:10 reduce 124:9 reduction 35:2 redundant 152:22 refer 79:20 85:20 87:8 reference 41:22 94:3 155:22 174:6 184:21,25 referenced 68:13 117:20 172:5 references 184:18 referencing 28:11 referring 23:1 refers 73:7,9 reflect 24:19 161:22 reflecting 149:17 refresh 85:20 refute 130:21 regard 13:9 47:8 77:22 79:22 117:17 135:1 143:25 197:16 199:16 regarded 81:21 regarding 142:21 145:6 165:13	region 60:17 registered 150:25 regular 16:6 20:15 63:5 89:14 regularly 140:20 regulation 193:20 193:21 197:4 regulatory 9:15 193:18 196:2,5 197:9 reject 187:5 rejected 161:2 163:16 169:3 relate 69:4 110:17 111:14,22 113:16 158:6 177:6 related 41:7 42:14 44:11 60:1 62:5 63:7 124:12 144:1 163:2 177:12 relates 44:4 62:9 80:19 81:5 104:3 104:18 109:25 112:8 124:3 177:15,16 relating 11:15 98:3 102:17 145:22 relationship 43:21 46:10 relative 198:18 relatively 26:11 release 146:20,24 174:10,19 178:12 relevance 198:16 199:11 relevant 195:11 reliable 53:6,11 54:3 55:6 rely 169:21	relying 175:8 remain 193:13 remarked 22:6 remarks 98:1 remember 41:6 47:6 96:3 99:2 108:18 123:17 134:23,25 143:17 removal 123:12 remove 31:24 33:6 36:17 39:8 158:20 158:23 removed 163:10 rep 24:6 79:16 repeat 159:13 repeatedly 94:21 120:6 167:1,1 repetitive 152:3 rephrase 18:10,16 46:3 58:6 124:19 141:1 187:13 report 14:25 20:5 20:9 26:1 30:5 35:16,18 36:15,19 43:1 46:18 49:18 50:21 64:22 65:3 66:17 69:24 71:19 71:22 72:4 74:7,8 74:8 76:20,21,24 77:1,11,23 78:7,25 81:9 84:7 87:3 105:13 106:14,20 113:21 118:23 134:3 140:22 171:2 193:19,21 195:2 196:5,15 197:16 199:19 reported 41:7 42:8 42:14 44:22 45:7 45:23 54:5 56:9 70:20 78:8 83:13	88:13 99:1 100:12 109:2 117:18,19 118:8,20,21 140:21 141:4,12 148:18 196:13 reporter 200:4,14 reporting 35:13 35:13 69:16 76:17 77:20 88:5 106:19 197:9,24 198:12 reports 33:13,20 43:2 45:5,8 52:14 55:7 68:22 69:1,3 69:15,17,18 70:21 71:21 100:6 187:7 194:11,12 196:4 196:15 197:4 199:13 represent 16:15 127:5 representation 199:6 representative 7:5 represented 118:2 118:5 153:2 reprint 186:9 request 102:16 169:3 172:4 179:15 requested 145:7 requesting 10:8 172:1 require 12:5 required 141:11 196:12 requirement 193:18 196:2 197:9 requirements 31:21
--	--	---	--

[requires - roslyn]

Page 29

requires 196:5 research 26:1 32:2 34:7 36:19 37:22 38:17 47:9 81:12 96:19 102:15 145:9 164:8,13 165:2,5,9,11 reserves 197:12 residual 16:14 respect 94:13 114:24 respectively 132:16 respiratory 45:12 respond 9:17 194:3 195:24 196:7 responded 9:23 responds 9:22 response 8:23 9:9 10:1,6,7 12:17 33:12 166:12 168:22 172:20,22 179:2,3,5 182:12 182:15,23 183:1,3 183:4 198:18 responsible 59:20 195:1 responsive 147:24 159:22 163:24 181:3 rest 170:20 result 48:6 86:24 86:24 110:11 results 8:10,12 10:13 21:20 23:25 25:11 35:14 49:21 50:20 52:25 68:4 71:17 75:24 102:19 114:6 140:23 182:6	retained 53:20 return 193:5 reversible 197:4 review 14:19 24:12 34:1 68:18 68:22 101:24 129:19 183:1 reviewed 10:3 11:5 60:3 85:1,2 102:2 reviewer 182:7 reviewing 39:2 179:19 revise 147:3 revision 53:22 rewrite 143:11 147:3,9 148:6 rewriting 143:13 147:16 reynolds 34:14,19 93:20 rich 60:17 right 12:12 14:15 15:16 16:23 17:5 17:15 18:6 19:15 19:20 22:17,21,24 23:19 27:22 28:1 28:5 29:21,24 30:7,10 34:11 38:25 39:10,13,21 40:18 41:19,25 42:8,21 43:3,23 44:3,7,11,15 45:22 51:2,22 52:1,15,16 53:6,13,15 54:11 57:4 59:21 61:21 64:16 65:5 68:10 68:25 69:4,22,25 70:5 71:24 72:13 72:22 73:2,19 74:17,25 76:17	82:9,13,19 83:12 83:16 84:16,20 85:5 87:9 88:3 89:10,14,20 91:15 91:17 93:15,21 97:21 104:23 109:1 112:6,20 115:6,15 116:8,21 117:13 118:9,16 118:18 119:14 120:4,17 121:5,9 121:11 122:23,25 124:5,14,17 126:10 127:8,11 129:17,20,23 130:15,24 131:2 132:16,21,24 133:8,19,21 134:7 136:20,25 137:3 137:24 138:18 139:12,19 140:5 140:18 141:19 142:2,23 143:1,2,7 145:4 146:12,18 147:5,10,15,17,21 148:19 150:16,22 152:4 153:5,15,16 153:23 154:13 155:20 156:5,8 162:13 163:6,12 164:4 167:13 169:3,10,15 171:17 172:8,14 173:24 174:4,5 175:10,16,23 176:5,9,25 178:9 178:14 179:2 183:21 184:3,6,12 184:16 185:6,14 185:20 186:1,1,7 186:11,13,18	188:10 189:7,12 189:16 190:3,17 191:18 rise 81:17 risk 11:6,8,23 15:1 15:3,5,16 16:3,6 16:16 17:9,25 19:14,24 20:16,18 102:7 169:21 173:19 184:12,13 188:9 190:6 195:13 196:1 198:20 river 132:18 133:9 rj 115:23 road 165:4,9 robert 160:5,7 162:15 171:6 184:8 robin 47:24 48:3,7 48:21 49:19 52:23 53:8 54:7 55:1,4 rock 64:7 69:11 80:24 126:25 rod 154:10,12,14 154:15,17,18 rods 154:7 rohl 78:24 role 80:11,12 160:6 162:15 164:8 roll 78:3 rolle 100:11 160:7 rolled 77:25 ronning 1:21 3:12 6:11 ronnings 6:18 roofing 166:3 room 192:24 roslyn 1:4 3:10 6:8
--	--	---	--

[roth - seen]

Page 30

roth 3:2	99:7,19 100:9	119:11 121:3,4,7	195:19
round 47:24 48:3	103:4 104:1,19,22	121:11,15 123:5	secret 32:13
48:7,8,21 49:18	106:16,25 107:1	126:24 127:22	153:13
52:23 53:8 54:7	111:24 114:25	129:16 130:8	section 67:12
54:25 55:4	115:4 140:6 161:6	132:9 133:4,18,21	128:23 129:3
routinely 15:6	163:5,13,15,21,23	134:3 139:16	130:7 139:15
rubino 39:18,24	164:4,22 165:13	145:6 146:8,8,15	sections 132:14
43:1,2 46:14	179:11,22,25	147:10 156:16	133:5,17,21,24
rubino's 44:22	181:19 182:2,3	158:22 159:5,17	secure 197:18
rudier 145:21	sampling 161:23	163:4 171:21	see 13:3 16:19
146:4	161:24 162:2	174:4 176:2 178:6	23:20 30:20 31:24
ruled 119:21	167:6	178:12 185:24	36:17 39:7,12
ruling 96:21 111:3	samplings 163:3	186:9 187:12	42:6 48:5 50:18
111:19 129:12	sampson 92:4	194:19 195:2	53:8 72:10,19
run 28:10 30:1	satisfied 8:1,3,14	199:19	89:2 96:8 105:4
155:18	satisfies 16:17	scenario 11:18,19	105:14 115:12
running 85:12	satisfy 86:12	12:24 14:2,11	119:9,11 120:10
runs 60:19	save 115:13 192:6	19:12 20:13	121:13 124:6
russell 121:22	saw 16:8 19:16	school 29:13,16	129:3,16 130:8
s	38:24 139:1	30:3 77:14,20	131:20 132:9,23
s 5:2 7:9 136:1,1,1	saying 11:14 19:24	78:6 155:13	139:14 144:3,21
sacramento 116:9	27:1 51:6 75:19	schulz 53:19	145:25 150:3
safety 8:11 9:14	106:15 110:3	sciences 14:15	160:10,20 167:19
13:17 21:2 59:21	115:18 136:19,21	scientific 62:23	167:20 171:2
66:18 80:12	147:7 150:14	scientist 14:13	172:22,24,25
100:21 102:6	151:7	34:11 39:25 127:4	173:18,20 178:21
sales 108:15	says 17:8 18:1	scientists 11:5	180:24,25 181:9
sample 26:17 27:2	19:20 22:19 23:22	12:21 30:19 36:12	181:14,17,24
28:12 30:7 51:2	26:7 32:10 36:25	36:22 92:8	184:17,25 185:4
61:21 77:14 85:9	50:24 51:24 53:12	scope 18:22 93:6	186:2
86:12 90:11 94:16	58:2 62:1 65:7	screen 53:1 87:16	seeing 30:10
96:19 98:25 99:4	69:14,21,25 70:2	108:19 109:23	100:12 131:14
100:15 107:7	72:4,11,25 73:25	115:3 127:15	seeking 61:14
116:16	74:1,10,16,18	seated 6:4 47:17	196:17
samples 10:13	75:11,13,21 76:4	96:13 136:4	seen 8:9,24 21:15
25:6,9 30:2 31:23	78:10,12 85:17	193:14	22:10 31:2 32:5
34:11 35:6,20,25	86:3 87:14,17,25	second 40:9,12	32:10 46:19 53:1
37:3,12,14,23	91:25 93:18 97:23	42:4 46:24 55:4,8	55:19,21 56:11
49:24 64:7 66:25	103:20 107:16	55:11 73:20 77:16	63:25 71:16 72:2
74:21 79:1 86:10	111:24,25 112:4	91:12 100:5 126:8	72:7 87:15,17
94:2,25 95:12	113:25 116:4	132:5 166:8 195:8	101:16,18,22

[seen - sorry]

Page 31

114:6,7,12 129:24 143:12 158:18,22 159:1,5,19,24 167:13 180:17 187:8,15,19,24 sell 32:18 100:22 116:25 sem 182:2,6 semantics 151:3,7 send 186:10 sending 25:6,9 sensitive 23:24 24:14,18 sent 90:11 167:6 sentence 36:25 80:23 123:1 125:5 separate 82:16 133:9,16 157:10 158:11 separated 132:18 133:12 136:22 separation 28:19 29:23 30:2 134:8 september 89:19 90:23 series 111:24 139:15 175:3 serious 195:3 seriously 141:8 serpentine 65:18 65:25 66:1 73:13 73:18 74:4,10,11 181:20,21 services 14:13 set 27:14 62:2,11 62:14,25 63:11 156:10 161:10 setting 197:12 198:19 seven 51:21 52:7	shape 154:17,18 shapes 78:1 sheet 113:20 shelley 81:12 shipped 80:24 126:24 shoot 195:14 show 8:12,21 22:9 24:20 28:18 29:2 40:11 41:15 42:12 46:9 52:21 53:2 61:6 64:10 66:10 68:3 79:11 99:16 105:20 106:8 107:24 108:1 109:9 116:10 119:20 132:5 134:13 161:19 176:21 195:13 showed 30:10 41:8 44:14 68:10 74:2 90:18 114:7 142:19 143:4,20 164:21 shower 79:1,2 83:21,21 100:21 100:21 102:4,4 126:9,9,15,15 191:15,15 showing 68:5 shown 37:7 43:15 44:21 100:9 134:16 144:7 155:12 160:3 165:12 shows 49:25 sic 33:13 side 51:2,15 119:24 sidebar 13:4,5,14 18:23,24 19:5	40:21,23,24 42:22 57:20,22 59:10 67:4,5,20 79:8,9 80:14 94:14,17,17 94:19 95:18 96:8 103:9,10 104:8 113:2,5 114:19,22 114:23 115:21 128:14,16 129:10 191:22,23 192:5 192:22 193:5,6,9 193:10,11,15 signature 175:23 200:12 signed 12:11 148:25 169:13 significant 26:12 43:15 44:6 45:10 195:3 silicate 90:17 92:18,24,25 108:21 silicates 16:14 141:25 142:9,15 silicon 92:24 similar 33:2 similarly 102:21 simon 3:8 simple 48:3 simply 90:16 sinai 78:20 single 130:13 131:12 sink 81:18 sir 8:18,24 59:13 120:11 126:7 128:9 130:7,17 131:9,23 132:9 133:10,18 134:13 141:19 143:21 144:6 145:16	148:5 152:14 155:12 161:8,24 165:5 166:20 167:24 169:5 170:17 171:4 173:11,18 177:22 178:18 180:20 182:11 183:19 186:21 188:5 191:12 site 44:5,7 99:7 sites 43:22 sitting 199:3 six 51:21,22 186:5 187:9 size 10:10 124:8 skill 27:14 skip 87:11 slightly 121:8 small 20:17 81:18 81:21,22 99:8 106:23 122:3 smith 76:3 smoothly 16:15 societa 107:18 129:19 141:13 146:2 sold 11:15 32:20 32:22 107:11 157:6 162:25 165:25 190:14 somebody 100:24 145:21 son 108:14 110:2 142:3,7,10,23 sorry 12:19 13:13 14:17 15:18 25:5 28:5 34:22,23,25 38:1 52:20 58:7,9 59:17 63:10 67:23 67:23 70:11,25
---	--	---	---

[sorry - sullivan]

Page 32

72:18 73:15 74:1 76:22 82:21 84:22 91:16 103:6,8 109:13 111:4 116:2 123:7 128:6 137:14,25 139:10 144:19 155:25 160:11 162:8 169:17 173:15 179:9 181:4 195:2 196:25 source 31:10 121:12 125:23 126:4 129:19 sourced 60:10 sources 31:7 125:21 156:15 space 85:5 speak 85:7 145:12 191:21 speaking 119:23 146:17 190:24 191:24 192:21 speaks 82:3 146:8 specific 44:6 62:14 79:20 127:4 193:20 196:4 specifically 30:13 139:6 179:4 specimens 65:18 speculate 148:6 150:12 167:2,2 189:19 speculating 166:24 speculation 21:4 23:2 24:2 33:15 62:15 63:14,20 76:10 79:6 88:8 101:3 111:11 112:25 167:3	189:18 spent 30:23 64:6 174:13 spike 103:4,5 spiked 28:12 37:11,13 50:1 52:1 94:2,16 95:1 95:13 spiking 31:23 37:3 37:23 49:24 50:5 103:17,21,25 splitted 44:5 spot 188:17 spray 83:22 stage 139:18 140:8 stamped 169:7 stance 117:2 standard 48:22 49:20 50:1 standing 193:13 standpoint 21:2 stanton 194:22 197:17 start 117:8,14 started 33:12,20 34:3 117:13 starting 43:19 178:21 starts 197:15 state 49:25 77:22 93:24 95:9 99:24 141:23 148:19 165:23 200:5 stated 83:24 99:20 100:7 110:7 147:15 169:4 178:15 statement 10:9 68:1 71:20 72:6 145:23 163:20 169:2 172:2	179:17 statements 153:4 states 9:11 31:7,12 147:14,14,15 174:25 188:15,19 station 116:7 statistically 26:12 stipulated 199:9 stony 172:1 stood 115:11 stop 41:12 58:23 59:5 75:3 80:8,8,8 146:16 166:11 180:8 182:10 190:24 191:24 192:4,17,17,18,20 192:21 story 110:12 147:19 151:12,13 151:14 169:23 straight 168:6 178:3 stream 132:16 133:8,10,13 136:16,19,23 137:8 street 2:2 3:8,15 165:2,9 strict 142:1 strong 99:25 structure 90:17 99:17 121:19 155:15 structures 156:1 studies 17:12 39:20 40:1 58:11 100:13 149:16,17 158:17 174:4 175:8,16 study 20:7 40:12 46:24 67:10,11	90:10 102:25 104:24 105:13 139:18 140:8 167:21 stuff 120:17 stupid 151:2 subject 129:11 174:5 submitted 182:2 subsequent 19:25 subsidiary 157:13 substance 181:12 successful 158:6 sued 194:20 suggest 17:12 43:16 suggested 53:17 suggesting 20:8 88:16 suggestion 63:11 suggestions 53:23 suggestive 43:21 suggests 20:9 111:10 suitable 130:9 suite 3:9,16 sullivan 3:14 4:6 6:23,25 7:7,8,10 13:7,10,13,15 18:11,17 19:2,8,18 19:19 21:6 23:5 23:10,14 24:5,11 25:2,23 29:11 33:17,24 37:19 38:1,5 40:22,25 41:11,14,17 42:11 42:17,20,23 46:4,5 47:3,19,20,22 49:16 54:18,23 55:13 56:19 57:9 58:5,9,14,18 59:1
---	---	--	---

[sullivan - talc]

Page 33

59:9,11 61:15,19 62:17 63:16,22 64:17,21 65:12 66:15 67:8,14,16 67:21 68:8 70:4,8 70:10,25 71:3 75:4 76:12 77:7 77:10,12 79:15,24 80:2,6,15 82:5,12 86:16,21 87:6,21 87:24 88:10 89:3 89:5 91:2,6,16,19 93:9 94:9,12,15 95:5,7,11,19,23 96:15,24,25 97:4 97:10,13 98:10,16 98:23 101:5 103:13,24 104:4,6 104:9,13 107:25 108:3 109:8,12,15 109:21 110:20,25 111:4,7,13 113:3,7 114:21 115:1,11 115:22 116:2,14 116:21,22 117:5 117:21 118:12 119:3,6,15,20 120:20,23 122:18 123:7 124:18 127:22,25 128:13 128:17,22 129:3,6 129:8 140:25 142:19 143:15 144:9,14 147:11 148:11 149:2,6 152:11,16 153:6 155:4 159:8,12 160:15,23,24 164:15 166:10 171:10 173:15 174:20 176:14	179:9,15 180:10 184:7 185:9 187:11 188:11 189:2 190:9,22 191:1,19,22 192:3 192:8,11,14,19 193:7,16,17 194:4 194:6 195:18,25 196:9,25 197:3 198:2 199:5 summarized 52:24 55:23 summarizes 44:18 49:21 summarizing 35:22 summary 35:16 35:18 43:24 55:8 83:15,17 superior 1:1 support 12:16 43:11 68:19,23 111:8 sure 6:5 13:13,13 13:13 19:14 31:21 38:10 44:17 46:4 47:3,17 52:6 70:8 71:8 80:22 86:9 91:10 94:4 96:13 108:3,11,20 109:12 120:22 123:20 127:16,16 128:6,15 129:5 136:4,14 148:15 159:14 160:24 168:9 170:22 173:22 174:23 179:13 surveillance 11:6 suspected 86:11	sustained 18:9 19:6 21:5 23:4 24:4,10 33:16,23 37:18 55:12 57:7 62:16 63:15,21 65:11 75:3 76:11 82:4 86:20 88:9 93:7 101:4 104:11 111:12 114:16 118:13 124:19 141:1 148:1 164:2 svc 145:25 147:4 switch 20:24 21:12 47:23 57:14 67:25 sworn 7:9 system 140:8 systems 35:3 t t 5:2 24:21 25:14 136:1 tab 5:11,12,14,15 5:16,17,18 8:22 9:1 22:11 24:25 25:3,15,21 29:3,9 32:7 37:21 38:2 40:16 43:7 44:21 49:9,14 52:21 54:14 56:12,17 59:16,17 61:6,7,10 61:11 64:10,16,18 64:19 66:10 70:14 70:15 72:14 73:14 75:25 76:20 77:1 77:4,10,11,17 81:9 82:20,21,21 87:14 91:4,9,11 94:3 97:6 98:6 102:11 102:13 104:16 105:22,23 106:9 106:12,13 109:4,7 109:8 110:15	111:18 112:17 119:6 table 49:25 56:5,7 56:7,11 97:22 take 10:5 17:6 28:12 47:1,5 79:25 95:25 120:9 141:7 175:19 178:16 180:19 192:20,23 193:8,9 193:9,13 taken 60:4 104:19 130:22 135:8 175:3 talc 7:16 10:9,11 11:8,15 12:4,6 14:25 15:2 16:12 16:14 17:13 21:2 22:20 25:12 26:17 27:3 28:14 30:10 30:21 31:6,11,11 31:15 33:1,5,10,10 36:9,13,15 39:4,10 43:13,22 46:10 48:12 57:12,13,25 59:21 60:10,13,17 60:23,24 61:3 65:17 69:25 70:2 70:5 71:19 74:2 76:4,17 77:2,20,23 78:4,5 81:5,21,25 83:21 88:1 90:11 90:20,21 92:6,16 93:4,12 99:6 100:8,13,14 102:18 103:1,16 106:16 107:10 108:15 110:3,13 111:24 112:11,11 113:13,13,14 120:16 121:4,8,9
---	--	--	---

[talc - test]

Page 34

121:12,15,16,17	113:18 116:24,25	84:19 89:19 91:7	65:13 68:16,17
121:21,24 122:13	172:6 179:1	93:20 97:21	73:7 77:19 78:21
122:14 123:2	182:12	103:14 104:21	80:18 83:19 84:9
124:9 125:15,23	talk 7:14,20 9:7	108:24 112:19	90:8,13,14 91:25
126:6 127:8	12:21 14:18 20:24	113:21	92:14 93:11 98:24
129:19 130:9	21:12 36:21 39:3	taxpayers 174:14	99:3 101:15,21
131:3,6,19 132:10	39:17 41:2 42:2	taylor 14:19,20	102:14 106:21
132:12,20 139:11	47:23 48:1 49:23	16:22 17:14,24	107:21 108:12
140:9 141:5,13,23	53:21 54:25 55:14	18:1 19:9 20:1	119:3 128:22
142:12 145:12	55:25 56:23 57:14	169:16,17,19	144:24 147:19
146:21 147:19,23	69:1 70:17 71:24	175:25 184:18	151:21 185:25
153:21,22 155:8	84:19 91:22 92:11	186:18 188:6,7,7	188:14,24 199:5
155:16,22 156:1	99:22 100:5	189:5,18	telling 15:18 88:15
156:14,17 157:20	106:10 107:2	taylor's 14:24	tem 85:8 161:12
158:1,3,5,6,9,15	110:3 155:25	17:10 20:1 169:10	161:23
159:3,7,18,21	190:16	169:15,20 175:23	ten 15:3,8,9 20:19
161:3,10,11,24,25	talked 14:24 41:1	184:3	20:23 55:2,18,23
162:2 163:5,9	56:4 57:3 69:7	tb 71:1,8,8 72:14	96:5 140:1 177:17
164:13 166:3,17	78:14 84:15 85:4	73:15 75:25 77:4	186:23 192:24
166:19 169:2	90:1 96:16 103:2	77:9,11 80:17	198:19
171:7 176:3,12,18	106:17 107:14	85:24 87:13 90:23	tentative 53:22
178:22 179:11,22	111:1 112:5 116:8	91:11 94:4	tenth 17:12 20:8
182:8 185:3,19	148:24 195:25	team 53:4 54:1	terms 7:18 11:13
187:18 188:10	talking 36:7 37:8	technical 16:18	11:14,18,19 16:3
195:10	42:7 103:12 108:7	108:23 110:4	18:5 21:2,25
talco 99:6 107:18	123:24 124:1	technique 26:16	49:20 53:16 57:10
129:20 141:13	125:2 126:13,14	28:20 29:1 92:19	71:5 75:7
145:25	127:10 181:9	techniques 23:18	test 8:9 23:25
talcosis 123:14	186:4 193:23	67:1	24:13 25:6,11
124:2	talks 10:6 16:11	technology 171:23	28:5,6 30:21
tales 125:1,2	16:22 17:4 19:25	179:24	36:12,13,15 37:4
156:13 157:23	20:1,7 22:13,16	telegram 144:22	37:23 48:4,6,9,9
159:1 167:7	23:17 26:6 27:21	144:23 145:21	48:11,21 49:2,24
talcum 8:11 9:25	27:25 30:9 34:7	telephone 171:22	50:20 51:17 53:8
10:2,20,24,25 11:2	34:10 39:9 43:10	telex 144:22	54:7,7,8 55:6,15
11:21 15:6 20:14	44:1,9,14 53:5	145:21	62:22 68:4 69:5
26:15,24 30:4	55:9 60:11 61:20	tell 17:17 24:1	75:24 81:9 85:10
36:23 60:7,9 64:4	61:23 62:10 66:21	27:10 30:1 31:3	85:11,19 86:24
68:20 78:23	72:20 73:12,18	32:11,23 33:11	90:9 98:25 102:19
105:12 111:10	75:22 76:17 81:7	50:7,25 51:8,16,25	105:3 110:11
112:9 113:10,17	82:13,15,19 83:11	52:8 59:25 65:1	111:23 112:14

[test - translate]

Page 35

<p>113:21 114:6,8 116:16 181:15,18 tested 29:14 34:15 34:16,18 36:24 60:24 79:1 101:13 101:20 182:14 testified 42:3 79:22 114:13 testify 13:8 testifying 94:6 testimony 7:4 47:8 79:14 93:6,8 114:13 115:4,12 116:6 135:2 177:18 183:7 198:17 testing 8:4,7,13 9:25 10:2,13,24 12:15 24:18 26:6 27:11 31:23 34:10 35:19 47:24 49:1 49:19,20 52:12,23 53:3 55:4 56:1 61:5 62:14,20 63:12,18 66:7,19 70:12 76:16 77:14 83:11,15,16,17 85:7 100:17 101:25 102:10,23 105:1 106:5,6 108:23 116:23 167:6 174:9 179:1 179:16 182:11,12 182:23 183:20 tests 28:10,16 49:19 55:20 71:18 71:19 85:16 102:15 103:25 texas 3:9 text 188:15</p>	<p>thank 6:15,20 7:8 9:2 19:4 20:22 38:4 42:20 47:10 47:18,19,20 61:12 63:9 67:15 70:9 71:2 82:25 84:23 86:15 87:23 89:4 91:18 96:7 97:3 97:18 98:21 104:7 117:5,6 120:25 127:24 128:3 132:7 135:4 136:7 137:21 138:9,10 160:1,16,22,24,25 168:10 170:2,24 179:20 192:25 193:4,14 194:7 195:23 196:11,23 197:7 198:4 thankfully 148:9 thanks 98:11 193:1 theory 33:6 thing 41:10 43:4 90:6 107:17 168:4 176:8 188:2,5 195:7,8 197:22 things 33:6 42:13 62:25 81:22 151:9 153:12 think 15:10 21:14 21:14 24:14 25:17 32:25 39:24 41:21 43:4 46:23 48:17 51:4 56:3 57:16 60:3 61:15 68:1 96:20 115:17 128:18 143:1 172:14,15 182:25 196:21 198:23 199:10</p>	<p>thinking 136:12 thoroughly 92:7 thought 137:16 thousand 62:1 189:10 thousandths 18:4 three 29:17 42:17 51:21 52:5 83:20 114:2 126:19 147:2 162:21 165:13,16 167:6 170:7 194:16 till 145:15 182:14 time 7:25 8:18,20 9:4 12:2 21:11 38:13 41:1 52:15 52:17 59:4,21 64:6 104:3 113:8 122:13,15 124:7 134:18,21 138:15 143:12 156:25 162:10 164:9,23 172:23 174:14 177:17 181:6 times 19:13 93:25 114:3 138:11 177:5,11 178:8,13 timing 34:2,4 168:6 today 6:12 115:17 122:2 132:9 145:7 159:2 191:6 told 20:19 21:14 46:23 48:13,17 73:1 89:13 101:19 115:12 161:1 163:8 164:10 169:1 173:6 187:10 188:8 190:2,5</p>	<p>tom 81:12 tons 132:11 top 7:23 10:16 34:17,23 51:1 71:11 81:17 119:12 129:16 131:24 topic 47:2 106:17 186:3 188:3,3 topics 47:23 67:25 102:17 total 44:1 189:15 totally 134:11 toxicological 14:15 toxicologist 13:10 13:17 62:19 79:15 80:3 124:14 toxicology 80:12 81:8 82:13,15 123:14,21,23 124:2,12,17,22 125:9 trace 11:21 18:3 62:25 71:17 72:11 72:21,24 76:5 109:1 110:5,7 142:15,17 143:5 143:25 144:2,3 145:17,24 146:6 146:10,12 traceability 62:24 traces 108:22 145:13 trained 127:3 training 80:4,10 transcript 2:17 200:7,8 translate 110:4 146:4 147:9 172:11</p>
---	---	---	--

[translated - uses]

Page 36

translated 108:16 142:17 146:19	181:13 183:13,15 183:17	51:14,20 52:3,5 53:23 55:20 73:1	understand 27:14 59:2 62:22 63:1
translating 109:25 147:16	tremolites 141:25	78:15 85:15 86:12	64:8 134:5,7
translation 109:23 143:17,19,22,24 144:2 148:7	trial 1:4 6:7 32:24 34:8 38:7,24 68:2 192:13	89:11 90:1 96:16 100:3,17 106:20 107:1 130:4,10 131:1,5 132:14 133:4,17,21,24 134:4,8 136:17,22 136:23 145:15 151:8 153:22 162:18,21 170:3 176:5 177:25 180:6,16,23 181:17,20,25 187:4 191:16	138:21,23 141:8 174:23 177:18 181:5 191:10 198:16
transmission 48:20 73:6 139:11 162:3 180:18	tried 21:15 28:1 29:14 30:15,16	type 22:24 23:22 26:10 85:15 87:18 88:2,5 107:4	understanding 33:25 36:2 37:13 81:15 133:15
traveled 136:24	trigger 9:15	types 33:9 90:2	understands 146:25 195:14
tremolite 10:19 22:24 23:19,22 26:18 27:2,7 50:1 50:6,6,14,18,19 52:1 69:13,14,20 71:17,24 72:1,2,12 72:21,24,25 74:16 74:16,18 75:11,13 75:20,21,23 76:6 78:10,12,15 84:20 84:24 85:3,14,15 85:16 86:1,3,6,11 87:18 88:2,5,24 89:9,10,12,14,22 92:20,24 93:14,18 103:16 106:24 107:15,16 108:25 112:1,4 116:4 118:7,8,24,24 120:15 121:5,21 145:12 148:21,21 149:17 150:6,7 151:3,3,24,25,25 152:6,7,21 153:5 153:10,10,10,14 153:25 154:8 155:2,15,23,25 156:2,4,5,5 157:25 158:20 179:25 180:3,6,16,23	triggered 196:2 197:4	typical 158:16 typically 33:1 typo 88:16	undisputed 189:24 uninterrupted 194:8
	true 126:19 142:9 146:22 157:2,13 164:7 182:24 195:15 200:8	u	united 9:11 31:7 174:25 188:19
	truth 158:13	u.s. 11:2,15 31:13 146:22 183:14 189:14	units 99:11
	try 21:16 28:6,22 30:19 100:16 103:15 141:8 156:10 159:6	u.s.a. 145:10 146:25	unleached 74:1
	trying 25:11 27:22 29:18 31:17 59:1 59:7 114:24 159:17 161:15 192:16	uk 26:4	unpleasant 22:8
	tumors 44:7	ultimately 187:5	unqualified 79:13
	turn 23:15 73:25 83:14 105:25 109:22 130:6 131:23 169:5,12 183:23	um 129:7 137:1 173:12 175:24	unquote 72:20 87:25 114:7
	turned 6:6 47:18 96:14 136:5 149:16 196:13,16	unambiguous 150:15,16,17	unrelated 43:12
	turning 98:12	underground 105:4,14	unsatisfactory 28:17
	tv 116:7	underlying 68:13	unsuitable 28:19 29:1
	twice 177:19	underneath 136:20	untrue 151:14
	two 15:7 17:9 28:13,18 33:9 40:1 41:11,14 42:18 48:15 50:16		unusual 120:8
			upper 60:18
			upstairs 135:4
			use 22:7 33:2,4 48:25 71:22 75:7 76:14,24 84:23 85:3 120:17 128:17 133:16 156:14 174:19 176:12 191:14
			uses 28:7

usual 72:12 utter 167:3 utterly 79:13 153:4	villa's 110:12 143:10 violating 192:13 virtually 16:12,16 viscomi 2:12 visible 134:24 visit 145:3,6,8 visualize 30:12 volume 1:6 2:6 97:25 199:22	washing 33:2 38:14,22,23 washington 56:22 water 137:5 way 30:20 52:16 83:8 102:8 118:4 145:3 150:14 154:8 180:8 191:8 194:21,21 ways 58:3 we've 43:4 52:25 85:14 94:10 95:3 95:6,11,20,21 102:10 111:20 116:8 121:25 129:24 139:24 143:12 158:18 159:1 163:4 188:21 wear 134:23 wednesday 2:5 weekly 162:12 weight 26:18 28:14 37:2 weil 3:15 welcome 98:22 wenninger 171:19 171:22,24 185:7,8 186:5,8 187:22 went 118:15,18 140:17,17 142:22 166:19 168:23 west 2:22 wet 38:14 whatsoever 16:16 46:22 80:5 whilst 145:14 width 99:11 william 1:21 3:12 6:10 145:8	windsor 157:22 165:20 witness 42:3 57:8 87:7 115:16 144:11 152:12 160:19 166:11 195:12 199:12 witnesses 4:2 word 23:9 69:19 71:16,22 72:2,7,19 76:14,24 79:11,16 79:22 82:9 84:23 85:3 86:6,23 89:12 108:17,21 123:16,19,21 125:8,8 133:2 143:25 144:2 145:13,14 147:20 148:4,12,20,21 151:15,17,19,20 151:21,21,23,23 151:24 152:21 161:15,19 words 11:20 27:5 30:19 46:14 51:4 63:4 108:18 125:4 125:6,7 work 21:16 22:14 23:21 25:24 27:22 28:22 30:15 48:10 53:10 63:17 100:13 123:12 176:13 worked 29:16 worker 174:4 workers 175:9,10 175:17 working 21:22 32:13 53:21 157:22
v	v 1:6,12,17,23 val 122:10 129:20 129:22,25 141:14 141:15,16 145:22 146:2 valid 21:24 validity 48:22,24 valley 80:25 122:10,11 127:1 130:1 value 32:15,17 varieties 183:11 variety 50:2 various 31:12,16 48:5,7,24 49:22 53:10 81:22 122:13 197:11 verify 53:5 198:24 199:2 veritext.com 2:23 vermont 22:24 26:22 27:4,8 31:8 60:21,22 63:23 64:3,6,22,24 65:2 66:7,19,24 88:2 103:16 155:16,22 156:1 165:21,22 vernon 35:9 version 30:16 41:25 55:8,11 110:2 142:11 146:19 versus 6:8,9,10,11 villa 110:2 142:23 143:5 146:16,25	w	wait 41:12 160:19 194:5 198:8 walk 69:1 want 7:14 12:20 20:24 21:12 22:9 24:20 29:2 32:4,4 33:7 38:10 39:17 39:23 40:11 41:2 42:12 47:23 48:5 54:14 57:14 59:5 61:4,6 63:10,23 66:10 67:25 68:25 81:23 85:22 97:5 100:18 105:9 108:9,10 109:22 117:7,14 128:17 137:2 151:22 167:2 169:12 172:24 194:8 198:11,24 199:4 wanted 95:9,11 151:21 195:12 197:2 wants 79:10 94:25 160:20 warning 10:9 12:5 169:2 172:2 185:1 185:18 187:16 wash 33:3

[workplace - zone]

Page 38

workplace 45:18	y	yielded 77:25
world 69:12	y 99:5	york 3:6,6 172:1
world's 138:22	yards 134:11	z
worried 124:24	yeah 7:22 15:15	zeitz 35:9,11,12,22
worry 124:22	30:11 31:19 32:2	36:6
worst 11:7,18,19	32:13 36:25 38:9	zero 15:19 80:4
12:24 13:20 14:2	38:12 39:5,6	145:17 146:12
14:11 17:20 19:12	41:16 43:24 44:4	zeros 92:7
19:23 20:13	44:12 46:8 48:3	zone 130:14
wow 100:25	50:11 53:9 56:22	131:13,13
wrap 7:15	59:24 61:25 64:18	
write 9:11	68:22 70:4 71:9	
writing 10:7 184:9	77:7 80:23 86:2,3	
written 23:13 88:4	88:25 89:1 90:16	
89:21 124:7	91:9 92:15 96:24	
131:12 139:23	98:3,4 104:19	
140:10 143:8,18	106:3,14,20 107:4	
145:22 148:20	108:7,14,21 117:8	
150:17 152:5	118:7 120:10	
162:23 164:1,6	122:22 127:21	
178:10 183:22	130:12 131:5	
185:15 187:22	140:10 141:17	
wrong 17:21 43:4	144:23 156:3	
110:8 156:7	161:19 167:21	
172:11	169:16,18 188:20	
wrongly 100:1	188:20 189:20	
wrote 108:16	year 30:23 39:1	
142:3,6,10 143:1	54:24 55:17	
145:16 146:11,13	132:11 165:18	
150:10 151:11	years 9:21 15:7	
152:15	27:12 29:17 31:9	
x	31:10 60:16	
x 5:1,2 48:14,16	126:19 176:5	
48:23 50:12 51:5	187:4	
61:20 73:9 74:1	yep 49:25 98:19	
179:24 180:25	121:1 128:10	
182:4	131:25 186:19	
xrd 49:19 179:24	yesterday 7:3	
180:1 181:9,25	32:25 78:3 105:3	
182:1	145:7	

Exhibit 77

FROM THE DESK OF
W. NASHED

Dr. Goudie

I thought tremolite was mistakenly
identified in view of similarity to
Na sesquicarbonate!

W. Nashed

There are trace quantities
present confirmed both
by McCrone & Bill Aslton
Levels are extremely low
but occasionally can be
detected optically. This
is not new. J an

Revised report.
Just received.

108 T
109 T

Exhibit 78



WINDSOR MINERALS INC.

Windsor, Vermont

May 1, 1973

Subject: Memo - D. Hamer - 4/19/73
Dispersion Staining, etc.

TO: Dr. D. R. Petterson
Johnson & Johnson Research - W051
U. S. Route #1
New Brunswick, N. J. 08903

1. It is high unlikely that the operator is seeing calcite since magnesite (var. ankerite) occurs at something like 100 times the frequency of calcite in the ore.
2. It is highly unlikely that the operator is seeing tremolite since the ore body contains actinolite in some waste areas but has never yielded tremolite in identifiable quantities.
3. The optical differences between magnesite (var. ankerite) and actinolite are substantial.
4. Chemical tests will readily differentiate the two minerals, i.e. acid solubility.

We feel that it is in everyone's best interest to develop mineralogic information on baby powder.

We question whether the very wide dissemination of such tenuous information of large potential importance is in anyone's best interest.


R. N. MILLER

RNM:ab

cc: R. J. Mortimer-J&J, N.B.

EXHIBIT
J&J-367

J&J-0097580

JNJ 000301721

Exhibit 79

Johnson & Johnson

W.A.
5/8/73

New Brunswick, N.J.

Subject:

Personal

Dr. D. Petterson:

Your question this morning was how
did Lewin assay timing relate to actinolite showings.

Baby Powder lots 108T & 109T were
alleged to contain asbestiforms by Lewin. They were
produced on April 17&18 1972. Talc shipments checked
by microscope here showed all lots clean just prior to
and right after that time.

The first showing of actinolite we know
about is October 1972.

The indications are that things were in
good shape when Lewin picked up the above two lots for
his assays.

W.A.

Bill - Halted

Exhibit 80

Johnson & Johnson

New Brunswick, N. J.
April 9, 1969

Subject: Alternate Domestic Talc Sources
File No. 101

Dr. G. Hildick-Smith

Pete, we have to firm up the position the Company should have on the presence of the mineral Tremolite in talc. Your staff will have to do this for us since the objections to that mineral have been mainly medical or clinical as opposed to chemical or physical.

The reason we have to firm up our position is that we have moved into high gear on some alternate talc sources and it is normal to find different levels of Tremolite in many U.S. talcs. We are looking at some of those.

Historically, in our Company, Tremolite has been bad because it has needle type crystals. Our position has been that these can stand on end, penetrate the skin, and cause irritation; consequently, talcs exceeding trace contents have never been approved. Over the past year or two, the medical literature has made reference to potential hazards of talcs containing Tremolite and I have seen some articles under the umbra of environmental health agencies from here and abroad which pinpoint severe objections to that mineral in talcum powders.

Unfortunately, Tremolite has different varieties and can be easily confused with other members of the mineral class into which it falls. Chemically, it is mainly a calcium silicate with varying amounts of magnesium silicate and sometimes it carries iron with it in minor amounts. Some varieties of it match asbestos, and I gather there has been a lot of attention given to the hazards of inhaling minerals of that type lately.

-2-

There is nothing we can do about the confused state of affairs on Tremolite from the mineralogical and chemical points of view as far as historic literature is concerned.

The question is...How bad is Tremolite medically, and how much of it can safely be in a talc base we might develop?


W. H. Ashton

pm

cc: Dr. R. A. Fuller
Dr. E. R. L. Gaughran
Mr. R. J. Mortimer
Dr. T. H. Shelley
Dr. R. L. Sundberg

Exhibit 81

Johnson & Johnson

New Brunswick, N. J.

April 15, 1969

Subject: ALTERNATE DOMESTIC TALC SOURCES

Project Code #101

Mr. W. H. Ashton:

Your inquiry of April 9th, 1969 addressed to Dr. G. Hildick-Smith has been referred to my attention for reply.

Over the years, I have reviewed the literature on the hazards relating to the inhalation of talc particles on several different occasions. In your memorandum, you indicate that Tremolite does have needle-type crystals and that our position has been that these could penetrate the skin and cause irritation. Actually, to the best of my knowledge, we have no factual information on this subject. It would seem logical that it could occur, although whether or not it would be of clinical significance would be conjectural.

We have been concerned to a much greater extent with regard to possible dangers relative to the inhalation of the talc with a spicule or needle-like crystalline structure as compared with the flat, platelet-type of crystalline structure. There are reports in the literature concerning talcosis which, as you know, is a form of pneumoconiosis attributed to the inhalation of talc. Reported studies have suggested that this does not occur in connection with the flat, platelet-type of talc, but does occur in connection with the spicule-type of crystalline structure characteristic of Tremolite. The reported instances have been extremely few but have, without exception, involved inhalations of high concentrations on an occupational basis of many years duration. Furthermore, we have occasionally received inquiries from various individuals, including General Johnson and several pediatricians, expressing concern over the possibility of the adverse effects on the lungs of babies or mothers who might inhale any substantial amounts of our talc formulations. In the past, we have replied to the effect that since our talc is essentially all of the platelet-type of crystalline structure, and is of a size which would not be likely to enter the pulmonary alveoli, we would not regard the usage of our powders as presenting any hazard. Obviously, if we do include Tremolite in more than unavoidable trace amounts, this sort of negation of such inquiries could no longer pertain.

- 2 -

Mr. W. H. Ashton

April 15th, 1969

Upon various occasions we have discussed the possibility of carrying out studies on animals which might provide factual information with regard to whether or not variable exposures to talc suspended in the environmental atmosphere might be productive of fibrotic and/or inflammatory reactions in lungs. For a variety of reasons, these have never been carried out here.

Since pulmonary diseases, including inflammatory, fibroplastic, and neoplastic types, appear to be on the increase, it would seem to be prudent to limit any possible content of Tremolite in our powder formulations to an absolute minimum. To the best of my knowledge, we have never been faced with any litigation involving either skin or lung penetration by our talc formulations. Some years ago, we were faced with a more or less serious problem resulting from what we consider to have been an unjust accusation of danger due to the presence of a small amount of boric acid in our talc. This created such a furor that we were more or less compelled to remove boric acid from the formulation. It is conceivable that a similar situation might eventually arise if it became known that our talc formulations contained any significant amount of Tremolite. Since the usage of these products is so widespread, and the existence of pulmonary disease is increasing, it is not inconceivable that we could become involved in litigation in which pulmonary fibrosis or other changes might be rightfully or wrongfully attributed to inhalation of our powder formulations. It might be that someone in the Law Department should be consulted with regard to the defensibility of our position in the event that such a situation could ever arise.

It is my personal feeling that until we have at least substantial evidence, based on animal work, to the effect that the presence of Tremolite in our talc does not produce adverse effects, we should not extend its usage beyond an absolute minimum previously mentioned.


T. M. Thompson, M.D.

TMT:JAG

cc: Dr. R. A. Fuller
Dr. Gavin Hildick-Smith
Mr. W. J. Ryan
Dr. G. H. Lord
Dr. J. E. Willson
Dr. J. Bothwell

Exhibit 82

Dr. C. Cooper
Univ. of Calif.

F
July 30, 1971

**CONVERSATION WITH DR. CLARK COOPER
SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF CALIFORNIA**

Dr. R. A. Fuller:

At Dr. Cralley's suggestion, a conversation was held with Dr. Clark Cooper of the School of Public Health, University of California, Berkeley. Dr. Cooper had worked at the National Center for Urban and Industrial Health and later moved to the School of Public Health in Berkeley. Dr. Cooper was Chairman of the National Research Council Review of Asbestos and Its Potential Health Hazards which published an excellent review on the subject. Dr. Cooper was called in the hope that he might be able to attend the F.D.A. meeting on August 3.

Dr. Cooper is well versed in the literature of the asbestos field, is familiar with all those doing research in it and apart from his position in the School of Public Health, runs a consulting company called, Tabershaw-Cooper Associates at 2180 Milvia Street, Berkeley, California. He is in a position to oversee epidemiological studies, conduct analytical studies on talc and allied materials, and conduct animal studies on appropriate materials. He would be pleased to discuss this area at any time. In asking Dr. Cooper his thoughts concerning the asbestos content of talc and the use of talcs for cosmetics, he indicated that in his opinion there is no place for asbestos in cosmetic talcs and would withdraw from the market any talcs that contained asbestos. He did not believe that there was a low level of asbestos content in talc which would be acceptable for cosmetic use.

Like many other researchers in the field of asbestos, Dr. Cooper appeared most cooperative and knowledgeable and could be of assistance to us as a consultant.

/jm

cc: Dr. G.H. Lord
Dr. W. Nashed ✓
Dr. T.H. Shelley
Mr. J.C. Walcott

RECEIVED Smith

AUG 2 1971

W. NASHED
JOHNSON & JOHNSON